EconExpert-MAESTRO Electronic Databook

User's Manual

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Notices

Copyright Notice

The EconExpert-MAESTRO Electronic Databook *(MAESTRO)* and its accompanying documentation are protected by copyright law and international treaties. The MAESTRO model, documentation, and reports generated by the model include prominently displayed Copyright Notices. Unauthorized use, modification, reverse engineering, reproduction or distribution of the MAESTRO model, or any portion of it, may result in severe civil and criminal penalties and will be prosecuted to the maximum extent possible under the law. All users are required to comply with the terms of the Software License Agreement, included with the model.

Changing Your Computer's Clock

If you make changes to the setting of the clock on your computer, particularly if you set the clock backwards after you have installed MAESTRO or forwards beyond the end of your authorized license period, an error will be produced when the MAESTRO model is opened. While Excel can be closed and reopened normally, MAESTRO will not function properly if it is reopened after such invalid clock settings have been made. If you encounter a problem related to the setting of your computer clock as it relates to MAESTRO, please contact CEI to discuss measures to repair your valid installation of the model.

Use of MAESTRO with Macros Enabled

In order to properly install and use MAESTRO, the *Macros Enabled* option for Microsoft Excel MUST be selected. The model will not function properly without Macros Enabled.

Microsoft Excel Versions 2002 and later include a Security Setting that can prevent the user from opening spreadsheets that contain macros. If this Security Setting is set to disallow macros, then you will not be permitted to open MAESTRO (or any other spreadsheet) with the Macros functioning. Prior to opening MAESTRO, you may want to check this setting on your versions of Excel and Windows. Specific settings for Windows Vista, Windows 2007 and later may also be required for installation of EconExpert on your computer. Please contact CEI regarding these settings.

Product Warranty and Warranty Limitations

Read the Software License Agreement (SLA) which is included as "Click-Wrap" with the EconExpert models. You are bound by the terms of the SLA. As indicated in the SLA, User's of MAESTRO and all EconExpert projects, indemnify Competitive Energy Insight, Inc. against any and all problems, damages, liabilities or claims, or other violation that might arise in association with any use of the MAESTRO model by the Licensee . Competitive Energy Insight, Inc. makes no warranties or representations with respect to the accuracy or fitness-for-purpose with respect to the use or application of the model except that Competitive Energy Insight will make reasonable efforts to correct defects in the model after they are identified and will promptly provide paid Licensees with updates containing such corrections when they are available. These reasonable efforts to correct defects in the model do not apply to Derivative Works developed by Users of the model. CEI assumes no responsibility for or obligation relative to the performance of or defects in Microsoft Excel. EXCEPT FOR THE WARRANTIES AND REPRESENTATIONS EXPRESSLY SET FORTH HEREIN, COMPETITIVE ENERGY INSIGHT, INC. DISCLAIMS ANY AND ALL WARRANTIES AND REPRESENTATIONS, EXPRESS OR IMPLIED, WITH RESPECT TO THE MODEL AND ITS CONFORMITY TO ANY SPECIFICATIONS OR DESCRIPTION, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR THAT THE MODEL OR THE RESULTS THEREFROM SHALL BE ERROR FREE. The SLA shall take precedence over any references to terms referenced in this document.

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Overview

Introduction

Thank you for choosing the EconExpert-MAESTRO Electronic Databook(MAESTRO), a member of the family of EconExpert suite of financial analysis tools. MAESTRO, developed by Competitive Energy Insight, Inc. (CEI) a California Corporation with offices in San Diego, has evolved as part of the EconExpert modeling suite, first introduced in 1997 as a tool first used extensively in CEI's private consulting practice in support of Fortune 500 clients and smaller entities to evaluate opportunities for development and acquisition of energy projects. MAESTRO can be used efficiently and effectively by project developers, utilities, equipment suppliers, consultants, banks and others in the industry to evaluate, study, make informed decisions on, structure contracts and track the economics of energy investments.

The key to MAESTRO and its sister financial models is the architecture which allows you to study any project through the models' input sheets. Built-in menus, wizards, automated functions, sensitivities, tornado diagrams, graphics and on-line help features will further assist you in evaluating opportunities and producing reports that clearly and accurately support the conclusions you reach.

The MAESTRO is a *Master Controller* that allows users of EconExpert and any other spreadsheets to perform the following actions:

- Spreadsheet Management
  Over time you will accumulate a library of many spreadsheets on your hard drive. MAESTRO can be used to consolidate, organize and catalogue those spreadsheets and their corresponding inputs.

- Scenario Analysis
  In Excel, a typical way that many user's perform analysis of alternative *Cases* or *Scenarios*, is to save multiple copies of spreadsheets onto their hard drive, with each spreadsheet containing a different set of inputs and each labeled with a specific name and stored in a folder somewhere on their computer or network. The MAESTRO can be used to save inputs and results from multiple scenarios in a single workbook, and to run automated comparisons against different cases.

- Consolidation / Portfolio Analysis

  A major challenge for the project developer and asset manager is to understand the dynamics phased projects and/or portfolios of multiple assets. Each individual analysis may have its own transaction-specific characteristics including schedules, system sizing and performance, terms for contracts purchase of feedstocks and sale of products, financing, project life/schedule and other considerations. MAESTRO allows the user to "roll-up" analyses of phased or individual transactions into a consolidated analysis providing consolidated data inputs and results.

- Side-by-Side Spreadsheet Comparisons

  Maestro will also allow you to combine multiple cases that reside in different spreadsheets or cases into a side-by-side comparison.

This User's Manual has been developed to assist you in getting started using MAESTRO, and to provide supporting documentation in the event that questions might arise as you use it. The User's Manual is complemented by Help features in the model and a Tutorial that can be accessed directly from the MAESTRO model's Command Menu. As a registered user, you can also contact CEI for support anytime you have questions.

Competitive Energy Insight would greatly appreciate your feedback and comments on MAESTRO and our other software products and we are committed to both updating and improving the models to include additional functionality that is important and valuable to the energy industry.

Subscriptions

To purchase Maestro or to extend your license, please contact Competitive Energy Insight via email or phone. Subscription rates are available upon request. Subscribers will be provided with software training, user support and access to all updates issued during the term of their Software License.

Prior to using the model, all users of the MAESTRO model will be required to acknowledge their acceptance of the MAESTRO Software License Agreement. Please see Section IV: Getting Started of this manual for additional information regarding the Software License. A copy of the License is included on the License Sheet in the model and in the Appendix of this User's Manual.

If you open EconExpert when your current license is within twenty-one days of expiration, the model will notify you that your license is about to expire. The EconExpert Help Menu includes an automated feature that allows you to extend the period of a license by entering a License Extension Code which can be provided by CEI. By contacting CEI and entering the necessary codes, your license term can be extended at any time. In the event that your installation of MAESTRO experiences problems, this feature may also be used to revalidate a current license.

If you forward copies of MAESTRO to others who do not have an active license, CEI can temporarily enable the model as *Fully Functional* on any computer. If others attempt to open a model you have sent them and they are not authorized, they will be advised how to contact CEI to obtain the needed codes. Without these codes, unauthorized copies of the model will not function properly. Once the authorized codes are received from CEI and entered copies of MAESTRO will function on the authorized computer during the authorized license period.

License Extension

1. From the *Electronic Data Book Menu > Software Licensing and Registration* select *Extend your License (Codes Required from CEI)*.

2. The following screen appears:

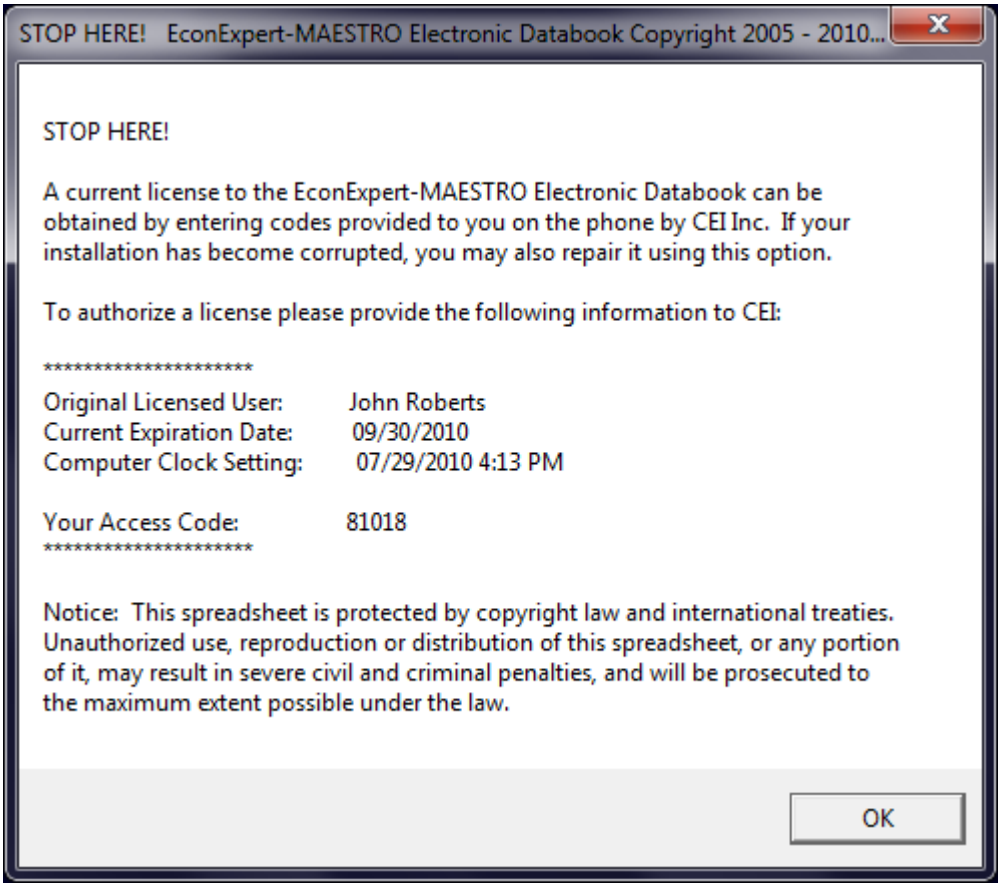


Figure 1 Information for obtaining authorization code from CEI

3. Contact CEI by telephone at 858-566-0221 and provide the requested information from the above screen.

NOTE	Response codes provided by CEI must be used immediately as they are specific to your computer's date and time.

4. After you have received an extension code from CEI, click *OK*:

   The extension code screen appears:

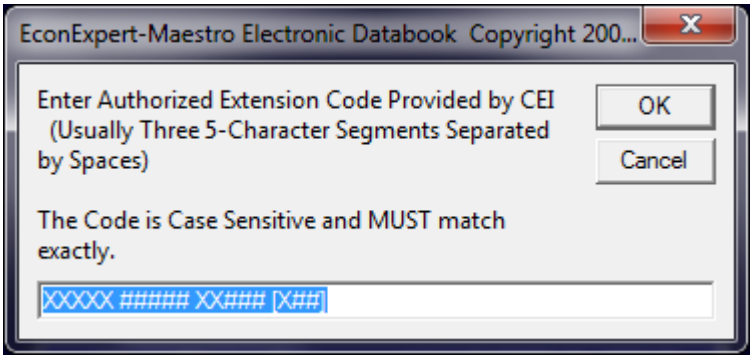


Figure 2 Enter the extension code original dialog

5. Enter the 15 – 18 character code provided to you by CEI, then click *OK*:

> NOTE The License Extension Code is comprised of three sets of 5-character segments, each separated by a single space. The code is case-sensitive and must match the authorized code exactly. If it does not match, you will be prompted up to 3 times for the correct code. All letters must be entered in CAPS.

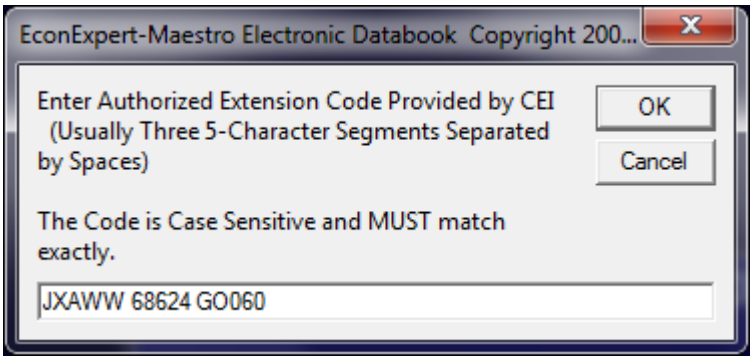


Figure 3 Enter the extension code provided by CEI

6. Enter your user name and the name of your company, and then click *OK*:

> NOTE The user name is usually your first and last name. This name must be at least 8 characters long. It will appear on the Program Greeting each time you open MAESTRO. The company name will appear on all printed reports generated by the model.

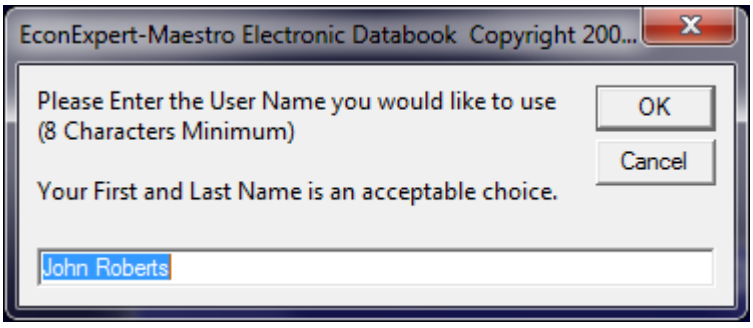


Figure 4 Enter your User Name

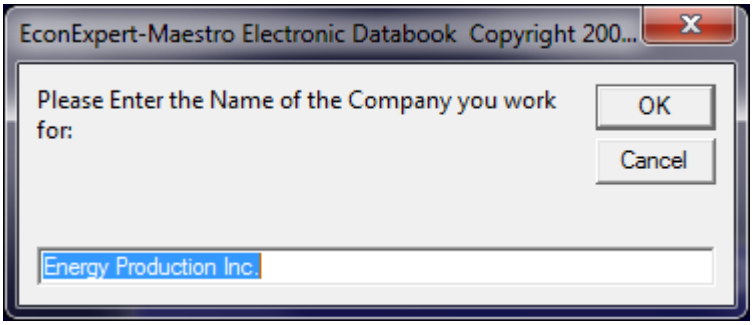


Figure 5 Enter your Company Name

7. The greeting screen appears, acknowledging successful extension of the license:

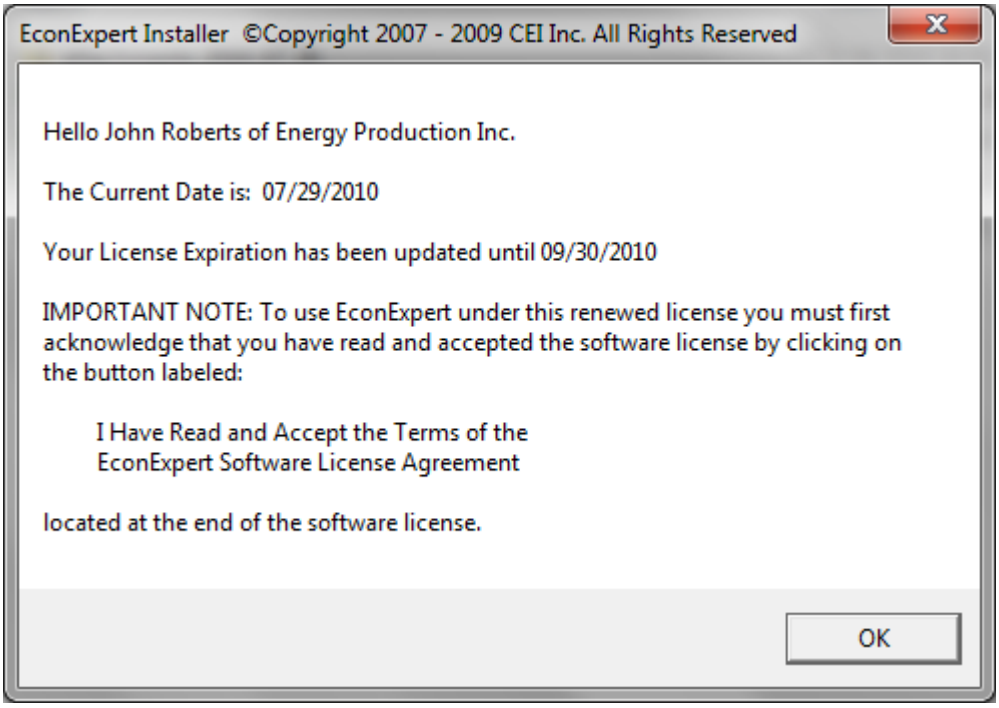


Figure 6 MAESTRO greeting screen

8. Click *OK*.

9. The License Agreement acceptance screen appears, please read the terms of the license carefully and then select *I Have Read and I ACCEPT the EconExpert Software License*:

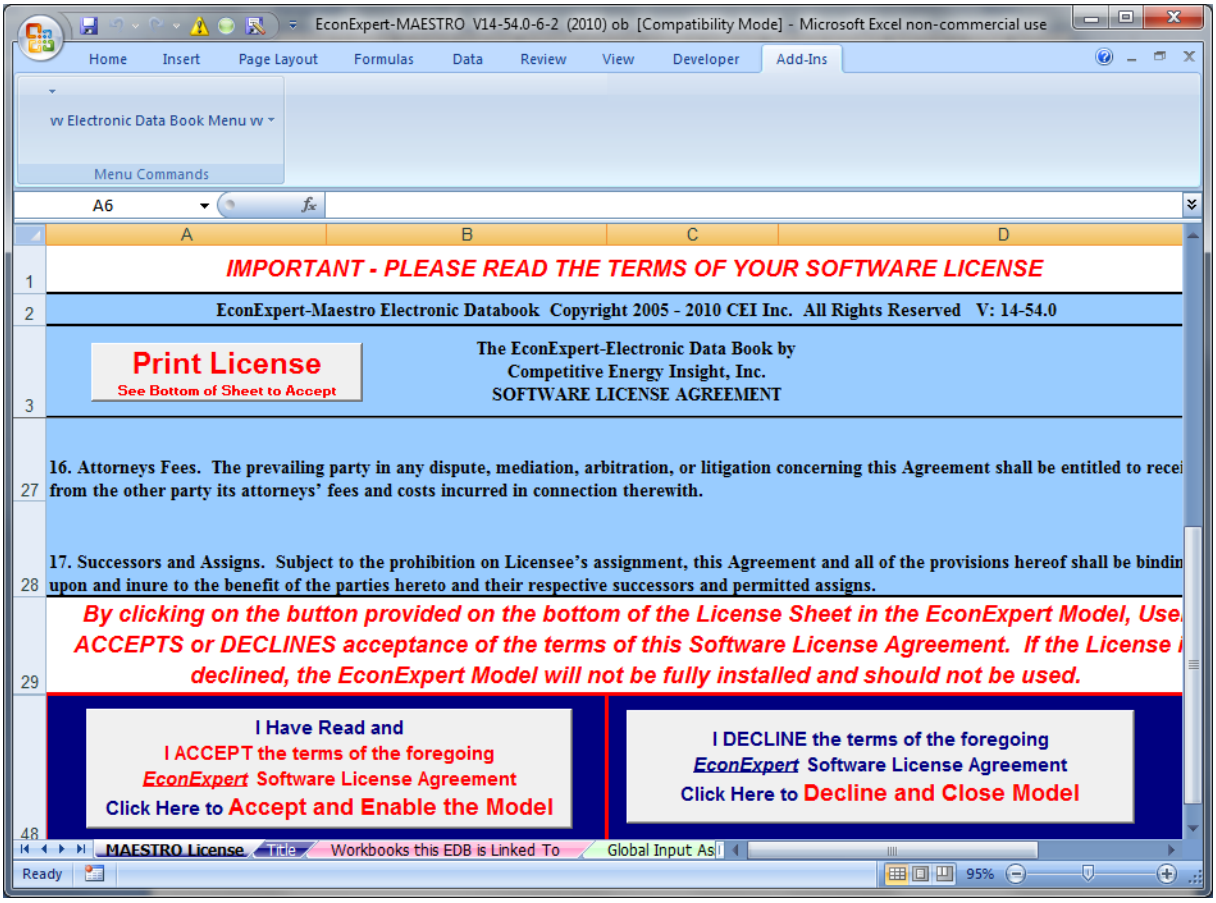


Figure 7 EconExpert-MAESTRO license agreement

10. The next screen confirms your license and gives you the option of registering your software:

NOTE	You can choose to register the software at this time by selecting *Yes*. If you would prefer to register at a later time, you can do so by selecting *Add-Ins > Electronic Data Book Menu > Software Licensing and Registration > Register Your Software*.

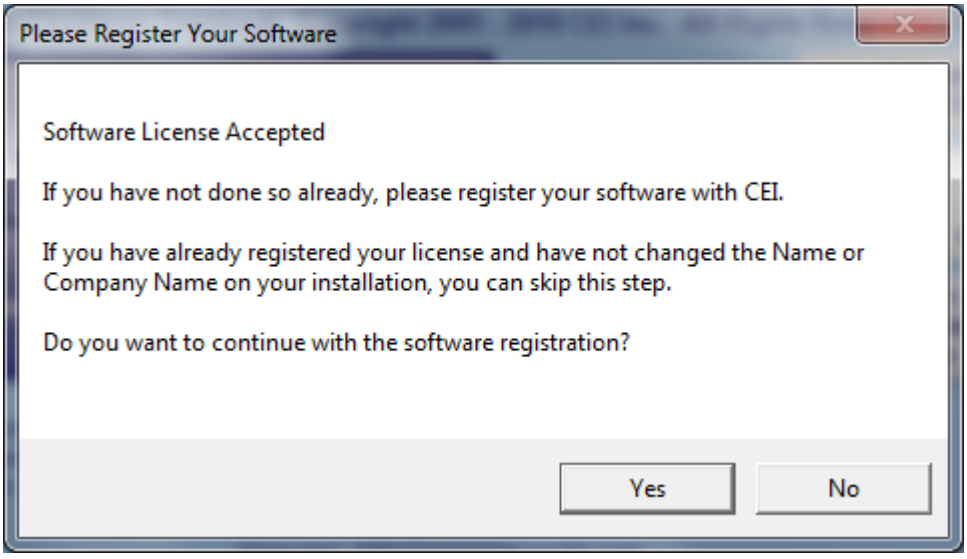


Figure 8 Software License Accept - continue to registration?

11. If you select *Yes*, you will be taken to the CEI website to fill in the registration page:

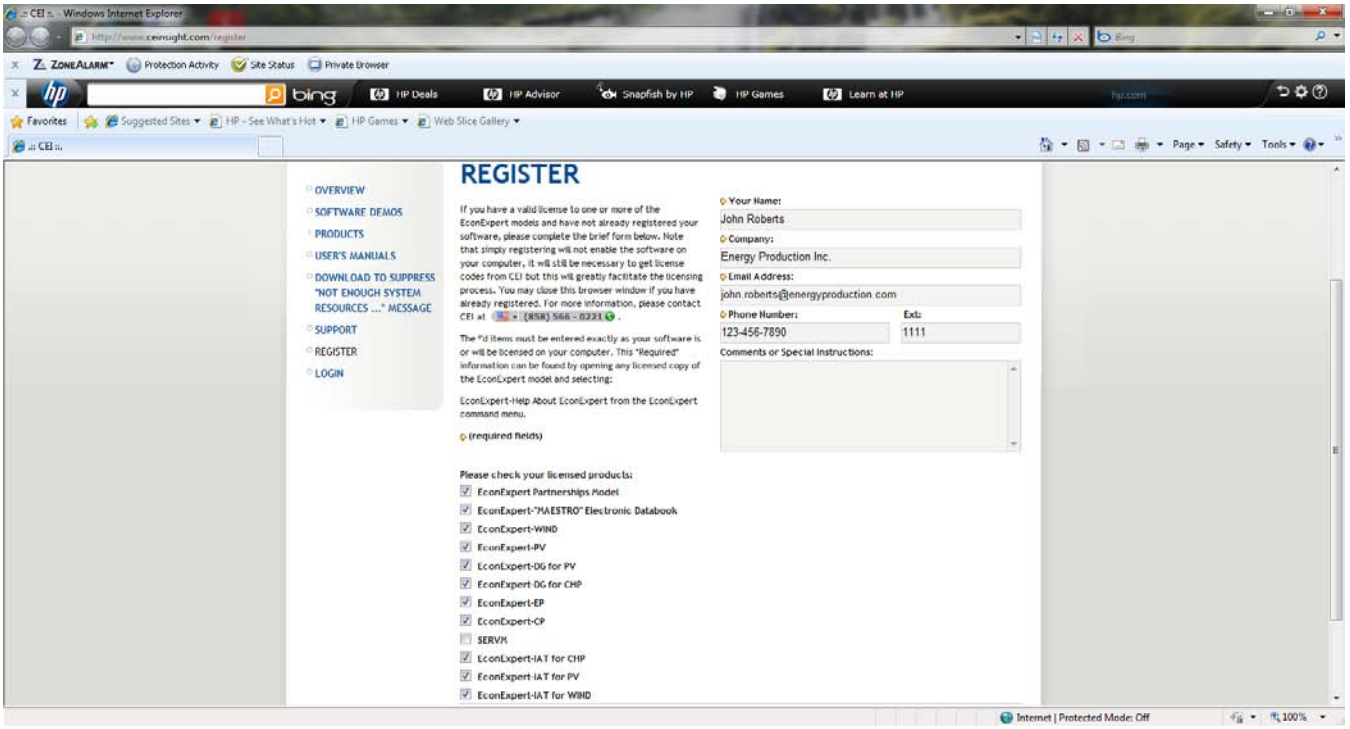


Figure 9 Software registration page on the CEI website

12. The next screen confirms the completion of your installation, and gives you the option of viewing a tutorial:

NOTE	You can choose to view the tutorial at this time by selecting *Yes*. If you would prefer to view the tutorial at a later time, you can do so by selecting *Add-Ins > Electronic Data Book Menu > MAESTRO Help > Tutorial*.

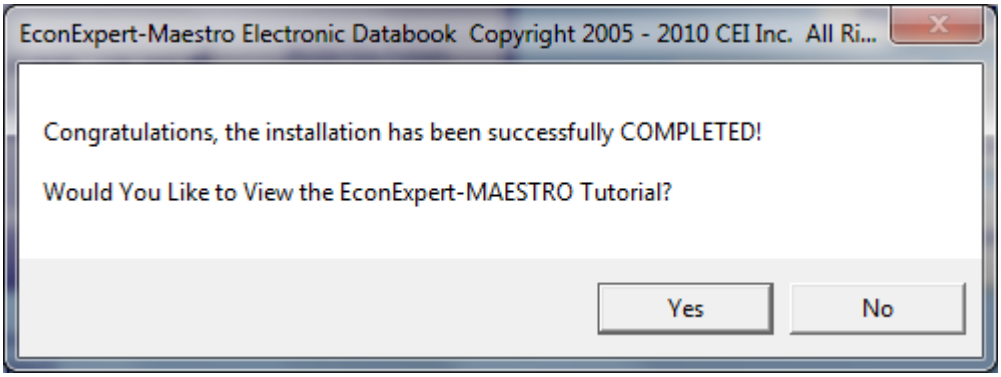


Figure 10 Installation complete - continue to tutorial?

13. MAESTRO will initialize and be ready for use. Other previously saved copies and versions of MAESTRO will also open during the new license term.

System Requirements

MAESTRO is a Microsoft Excel® spreadsheet that has been complemented with sophisticated Visual Basic macros to add flexibility and functionality. While the spreadsheet will work effectively with a wide variety of computer hardware, operating systems and versions of Microsoft Excel, the following *minimum* system requirements are recommended:

Hardware

- 512 MB or more of Random Access Memory (RAM).
- A graphics-capable display with setting of at least 800 x 600 Pixels and preferably 1024 x 768 Pixels.
- A graphics-capable printer.
- At least 100 MB of available storage on you C:\ hard drive (for spreadsheet storage). This memory is needed for the initial installation only. After the installation is completed, the model can be saved and operated on the installed PC from any local or network drive.

Software

- Windows XP, Windows Vista, Windows 7 or later Operating Systems including most international language versions
- Microsoft Office / Excel 2002, 2003, 2007, 2010
- (Recommended) Winzip® or the equivalent for decompressing the original files (Recommended but not required). In many cases it will be desirable to "zip" spreadsheets before attaching them to emails. Typical EconExpert Models are 4 - 12 MB unzipped, and 1 – 3 MB zipped.

CEI usually issues EconExpert files by email attachment or download. These files are typically compressed using WinZip, a utility that compresses files for more efficient saving and transport via email. To view the User's Manual or to install MAESTRO, you must first decompress the files. WinZip also typically accompanies Microsoft Windows operating systems.

It should be noted that while use of the MAESTRO software has been successfully demonstrated with the listed systems, the configuration of individual systems or networks might be a factor in the successful installation of this software. If problems arise, please contact CEI and we can assist you with the installation.

Getting Started - Installing MAESTRO

Single License Installation

For licensed users of EconExpert, a file will be provided to you by email or can be downloaded (with approval codes) from our website. Note that the installation of the model MUST be initiated from your C: drive and the installation file MUST NOT have the READ ONLY attribute selected. The original file provided to you will be:

EconExpert-MAESTRO Electronic Databook Installation File V.xxx [Your Name] [Your Company].zip

Installation Copies should ONLY be provided by CEI Inc. and under the terms of the License Agreement, you are NOT permitted to provide your Installation Copy of the model to others. You will only need to open this file one time as an installed copy of the model will be saved you're the directory *C:\EconExpert Files* which the model will automatically add to your C:\ Drive.

EconExpert-MAESTRO Electronic Databook User's Manual.PDF

This User's Manual can be downloaded from the CEI website (www.CEInsight.com) as an Acrobat PDF file which can be viewed and printed using Adobe Acrobat.

It is possible that you received a previously installed copy of MAESTRO from another user or a copy of the model from CEI that is not configured to automatically install, and that you would like to enable that copy of the model using License Codes provided by CEI. If this is the case, please refer to *Section II on Page 11* of the User's Manual for instructions on how to enable any copy of the model on a new user's computer.

1. Copy the original installation file onto your C:\ drive (preferably into a new folder named *C:\EconExpert Files*)

   NOTE Installation of the model MUST be initiated from your C:\ drive.

2. Unzip the .zip file provided by CEI onto your C:\ drive to the .xls version of the file.

   The Initial Installation File you receive from CEI will only enable the use of the model for a limited period, usually 10-14 days. If you have purchased an extended period license to use the MAESTRO model, CEI will provide you with the necessary authorization codes to fully enable your use of the model for the subscribed license period (please see the *License Extension* section for instructions on extending your license).

3. Once the installation file has been extracted, make the appropriate changes as follows:

   ### Settings for Windows Vista

   1. Select *Start* Button

2. Select *Control Panel*
3. Select *User Account Controls*
4. Click on the Radio Button to Disable *User Account Controls*
5. Accept and Close the *Control Panel*
6. Restart your computer

Settings for Windows 7 (Similar in Vista – See note at end of Section)

1. Select *Start* Button
2. Select *Control Panel*
3. In the *Search Control Panel* box on the top right enter: *User Account Controls*
4. Hit Enter
5. Click on the text on the left titled: *Action Center- Change User Account Control settings*
6. Drag the slider down to: *Never Notify*

IMPORTANT	Windows will tell you this is *Not Recommended*. CEI does not believe that this introduces any substantive risks to your computer, but if you should be aware that you do this at your own risk. What you are doing here is authorizing yourself to have the rights to install software on this computer. This slider must be set to and remain in the setting *Never Notify* for EconExpert to open and function properly.

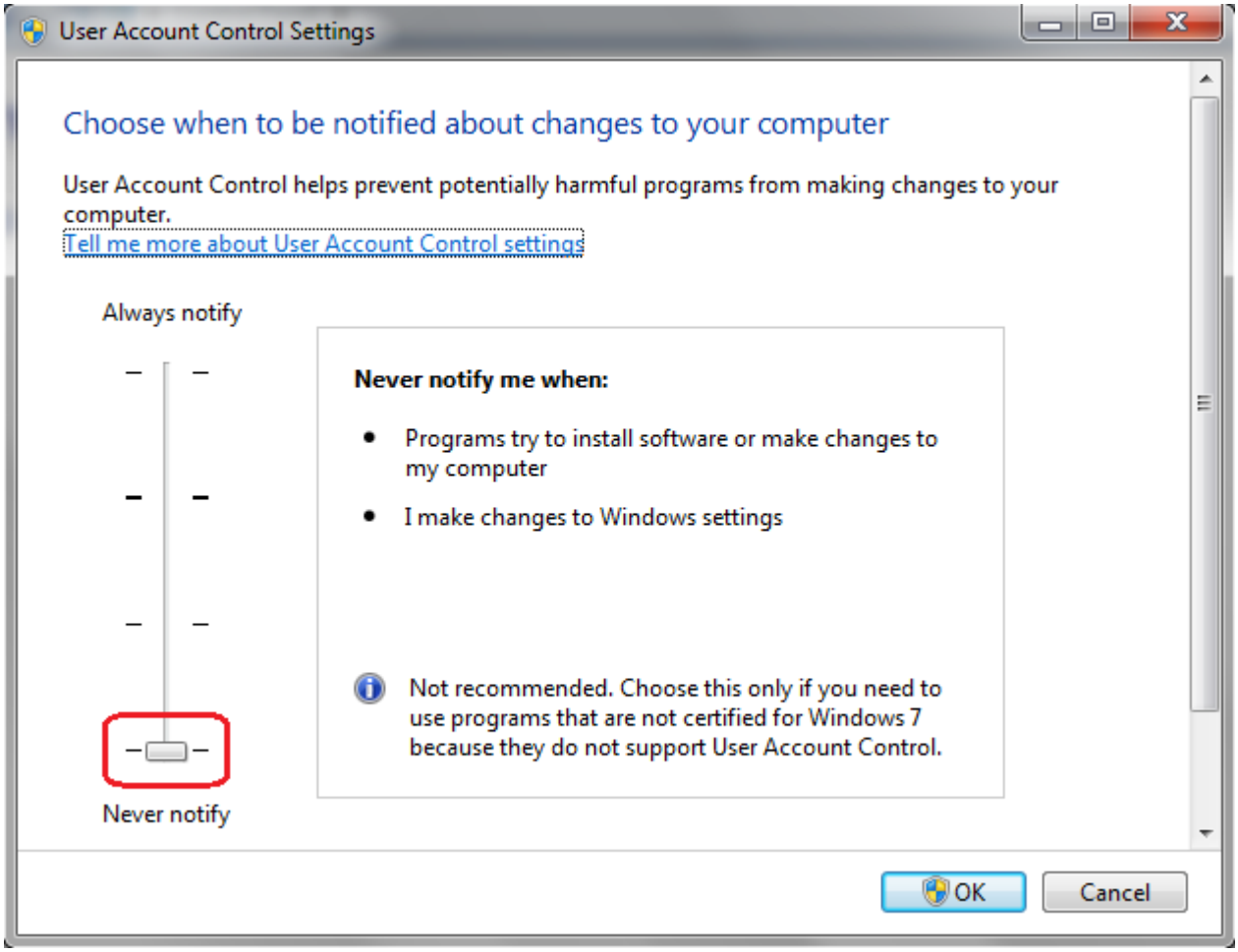


Figure 11 Control Panel User Account Control Settings screen - set to *Never Notify*

7. Close the *Control Panel*
8. Restart you computer

NOTE	In Microsoft Vista, the equivalent setting is to unselect the *User Account Control Checkbox.*

4. Make the appropriate changes to Excel as directed below based on the version of Excel you are using:

Excel 2002, 2003

IMPORTANT	MAESTRO must be run with *Macros Enabled*. Microsoft Excel Versions 2002 and later include a Security Setting that can prevent the user from opening spreadsheets that contain macros. If this Security is set to HIGH, then you will not be permitted to open MAESTRO with Macros Enabled.

1. Prior to opening MAESTRO, you may want to check this setting on your version of Excel. To do so select *Tools > Macro > Security from the Excel Command Menu*.

2. On the Security Level Tab, the settings selection should be MEDIUM or LOW. The MEDIUM Setting will continue to provide you with the warning message concerning spreadsheets that contain macros.
3. Open the extracted .xls MAESTRO file with Excel.

Also, it is recommended that no other worksheets be opened when you are installing MAESTRO. If your security level setting is set to MEDIUM as discussed above, Microsoft Excel will now provide you with a warning which is similar to:

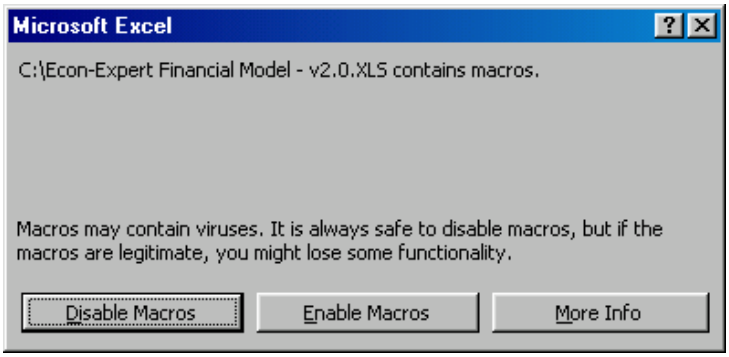


Figure 12 Microsoft Excel Enable Macros Screen

Excel 2007 / 2010

If you are using Excel 2007 / 2010, in order to properly access EconExpert please do the following:

1. Open Excel 2007 / 2010
2. Select the Office Button on the top left corner of your screen
3. Select the button labeled *Excel Options* on the bottom right of the dialog box:

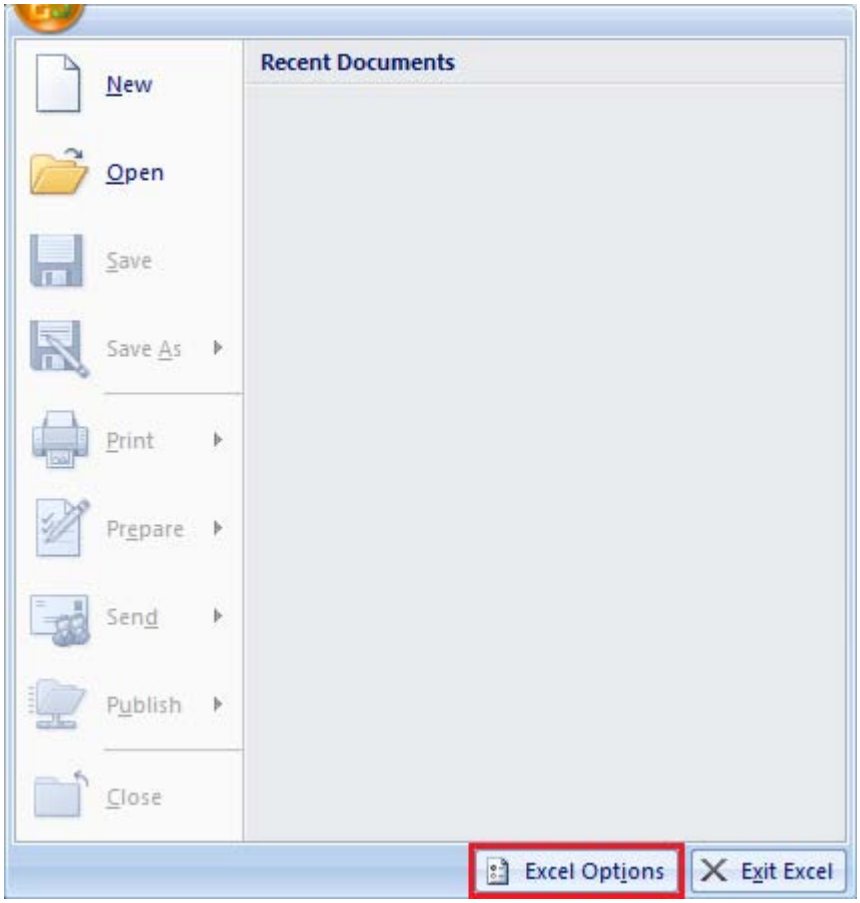


Figure 13 Excel Office Dialog screen - select "Excel Options"

4. Select the check box *Show Developer tab in the Ribbon* on the Popular tab:

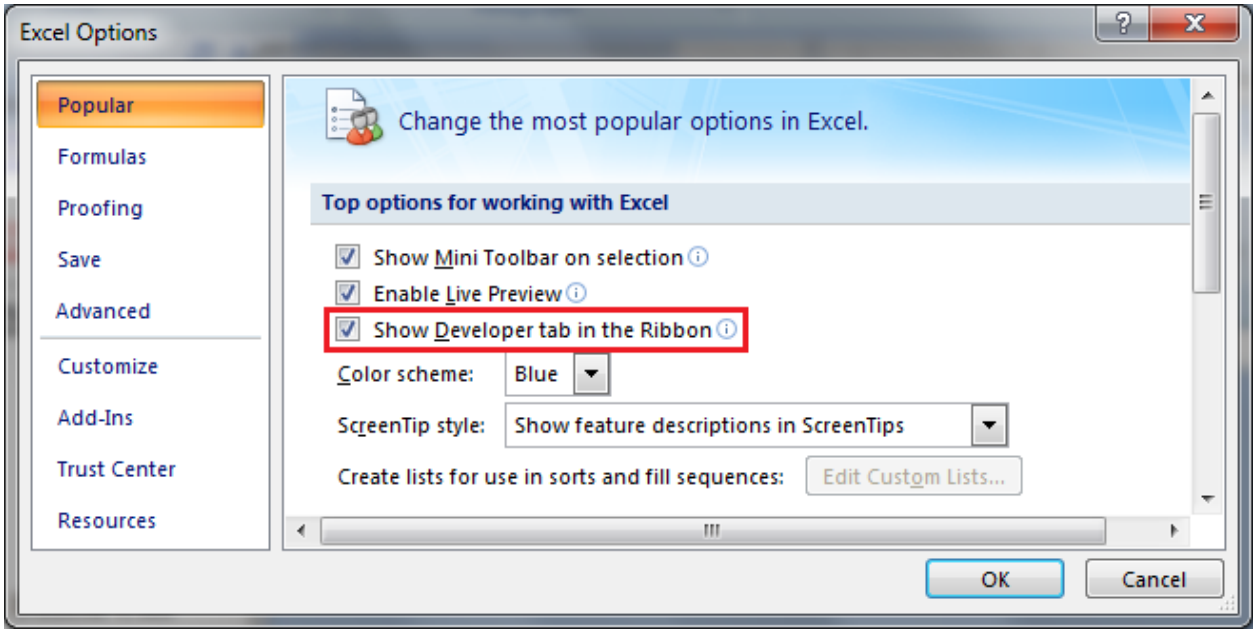


Figure 14 Excel Options > Popular - select "Show Developer tab in the Ribbon"

5. Select *OK*.
6. Under the Developer tab select *Macro Security*:

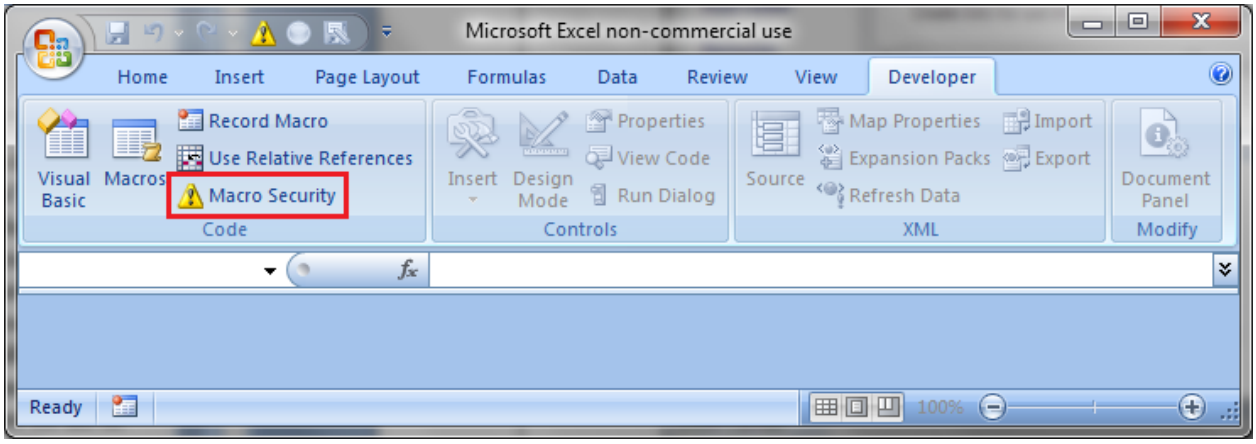


Figure 15 *Developer > Macro Security*

7. Select *Disable all macros with notification*
8. Select *Trust access to the VBA project object model*:

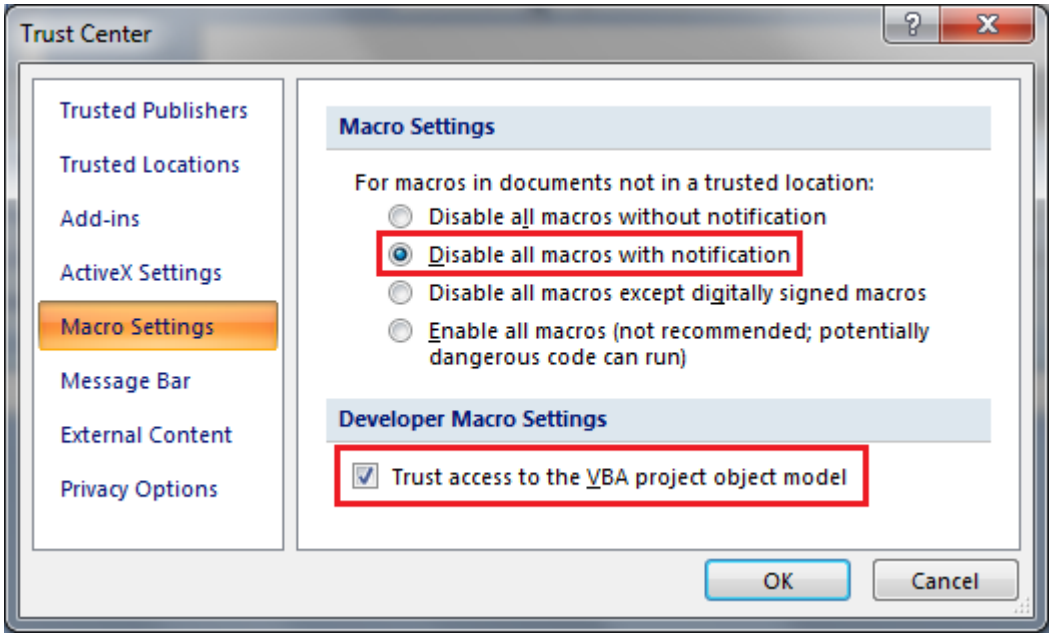


Figure 16 Developer > Macro Security

9. Open the extracted .xls MAESTRO file with Excel.
10. Once the model is open, select *Options*:

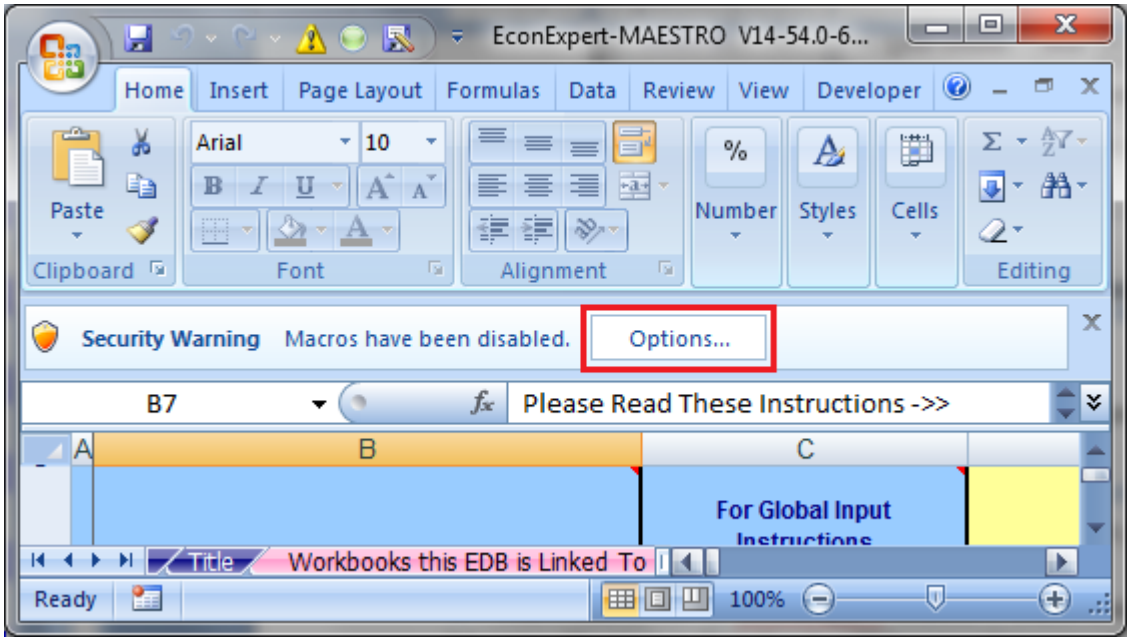


Figure 17 Security Warning Macros have been disabled. *Options*

11. Select *Enable this content*:

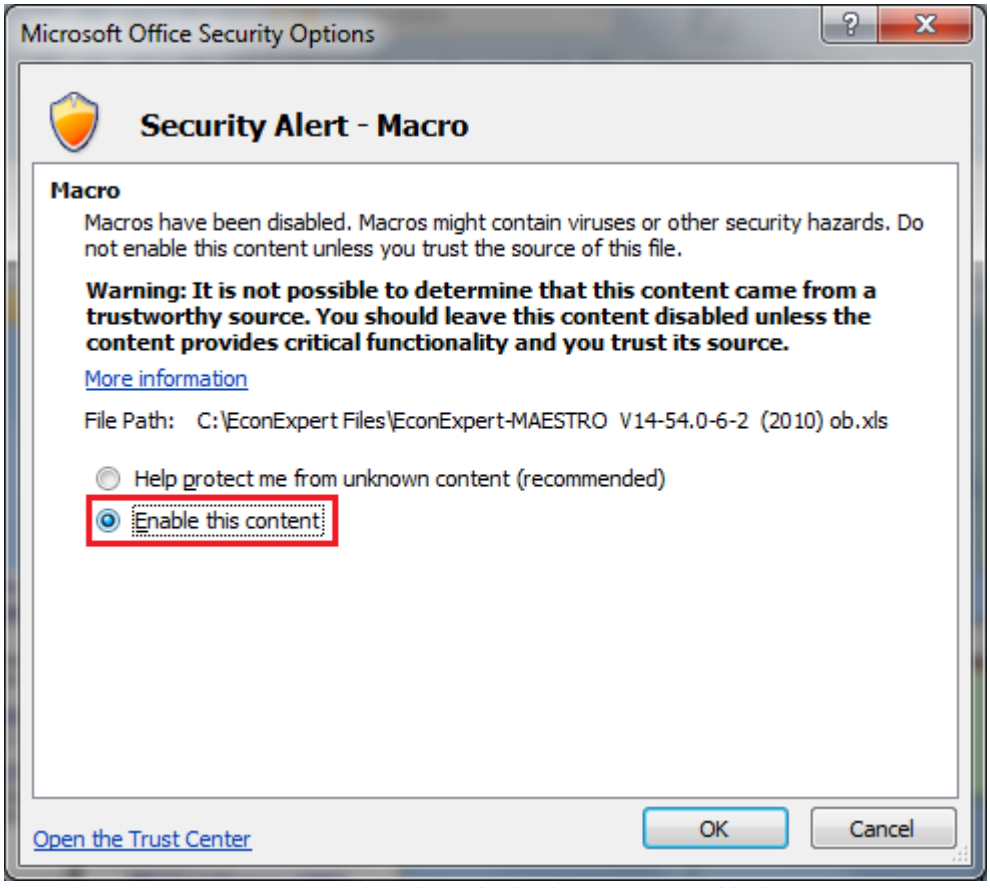


Figure 18 Security Warning Macros have been disabled. Options -> Enable this content

12. EconExpert will now load.

5. The installation of MAESTRO will proceed. MAESTRO will be saved to your *C:\EconExpert Files*. Settings for use of the model will be initiated. Next the following screen will appear:

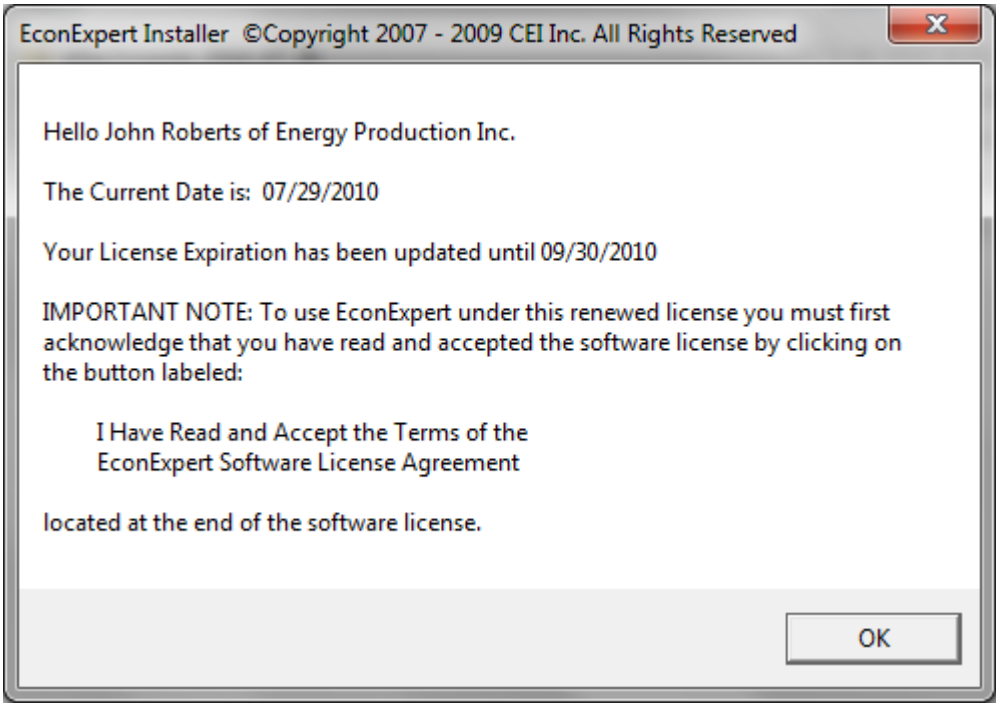


Figure 19 Copyright screen

NOTE	Please read this Copyright Notice carefully. Note that this screen will also advise you of the current date and on what date your license to use the software will expire.

6. Select *OK*.

NOTE	The *Recalculation Feature* on Excel will be set to Automatic. This is the recommended setting for MAESTRO.

A notice about providing copies of MAESTRO to others will be displayed.

7. Select *OK*.

8. MAESTRO will be initialized. In the upper left-hand corner of the spreadsheet, the message will appear:

MAESTRO is Initializing Please Wait

The Initialization Procedure will occur every time that you open the model. MAESTRO will automatically check its setup to ensure that all of its internal settings are set correctly when you start work.

Finally another important message advising you that prior to using the model you must acknowledge that you accept the terms of the Software License Agreement. This is required to enable MAESTRO's linking of calculations.

You will be required to acknowledge your Agreement with the Software License each time you install the model on an authorized computer and each time you renew your license to the model. If desired, you may print the license by clicking on either of the *Print License* buttons at the top of the Screen. If you read the license on your monitor, be sure to scroll down the screen and read ALL of the applicable license terms. A copy of the MAESTRO Software License is also included in the Appendix to this User's Manual.

At the conclusion of the Software License, you will be provided with the option to *ACCEPT* or *DECLINE* the MAESTRO Software License Agreement. READ THIS LICENSE CAREFULLY as by accepting it you will be legally bound to its conditions. PLEASE NOTE THAT THE MODEL WILL NOT FUNCTION PROPERLY UNLESS YOU CHOOSE TO ACCEPT THE AGREEMENT!

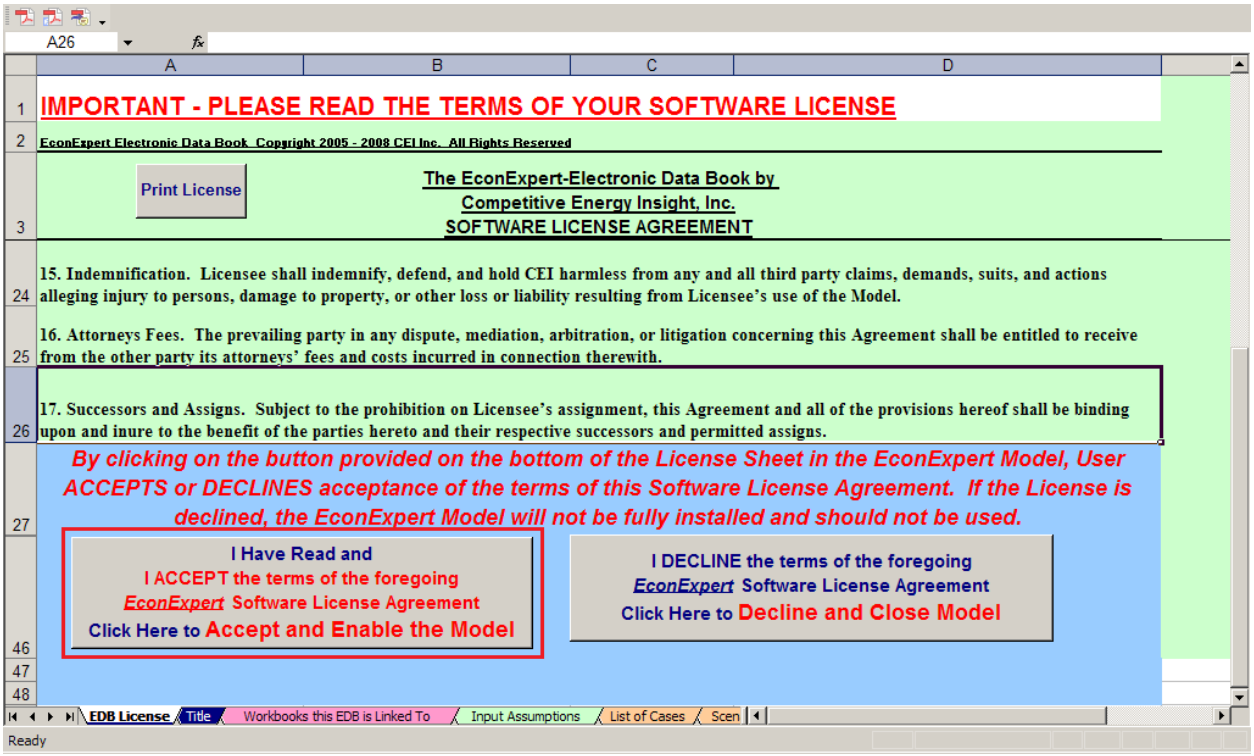


Figure 20 EDD License Agreement

9. The next screen confirms your license and gives you the option of registering your software:

> NOTE You can choose to register the software at this time by selecting *Yes*. If you would prefer to register at a later time, you can do so by selecting *Add-Ins > Electronic Data Book Menu > Software Licensing and Registration > Register Your Software*.

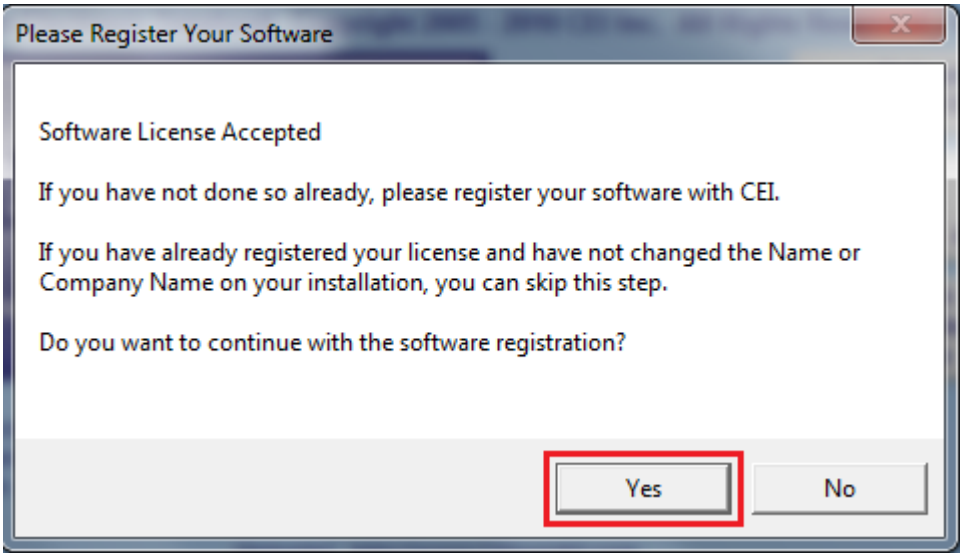


Figure 21 Software License Accepted - continue with registration?

10. If you select *Yes*, you will be taken to the CEI website to fill in the registration page:

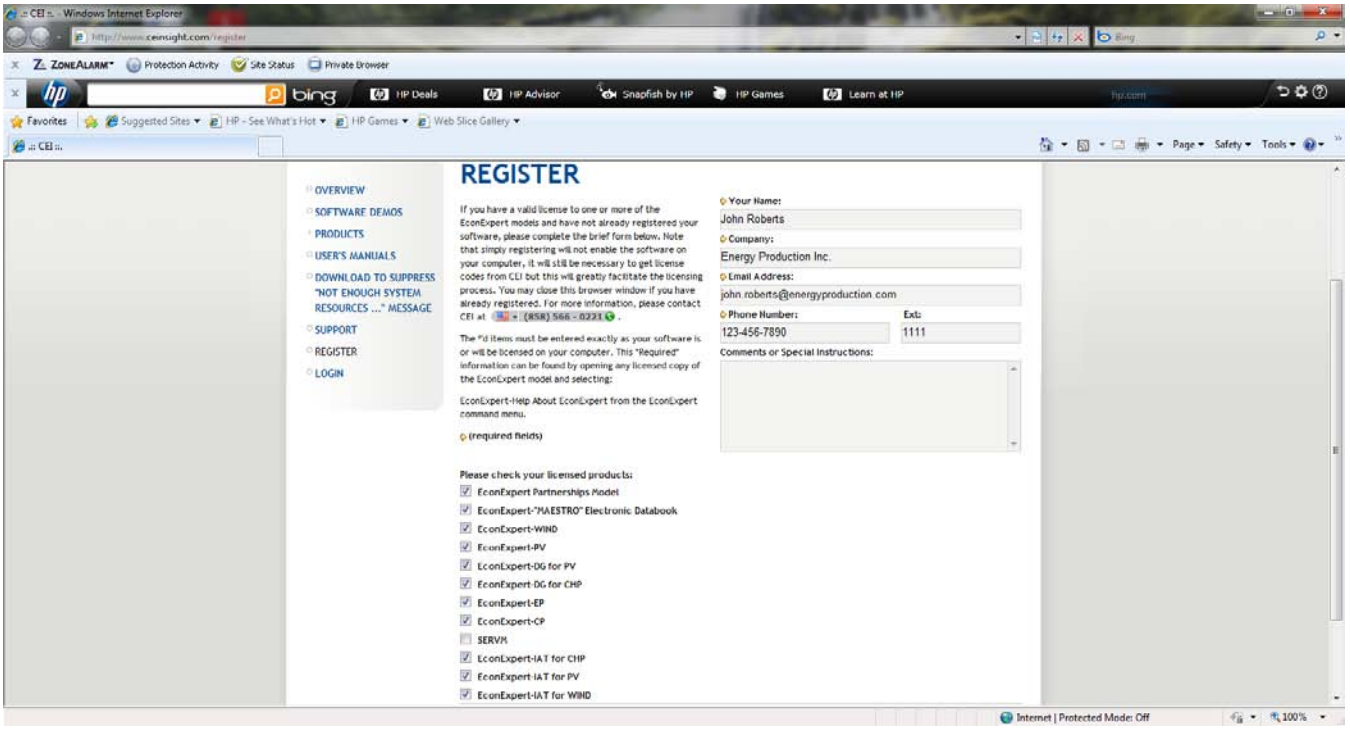


Figure 22 Registration page on CEI website

11. The next screen confirms the completion of your installation, and gives you the option of viewing a tutorial:

NOTE	You can choose to view the tutorial at this time by selecting *Yes*. This is highly recommended for new users and will take approximately 15 to 20 minutes. If you would prefer to view the tutorial at a later time, you can do so by selecting *Add-Ins > Electronic Data Book Menu > MAESTRO Help > Tutorial*.

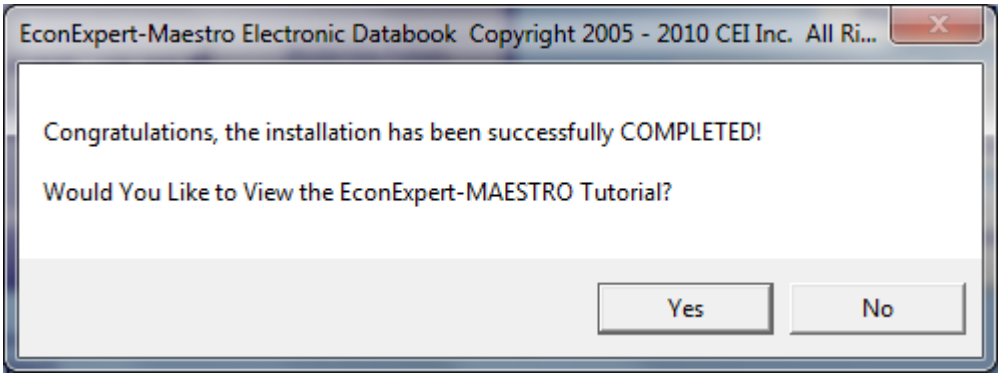


Figure 23 Installation successful - continue to tutorial?

12. The MAESTRO will also prompt you with a screen indicating which other workbooks the model is linked to, as applicable. If you are opening a fresh copy of the MAESTRO, the model will indicate that it is not currently linked to any other workbooks:

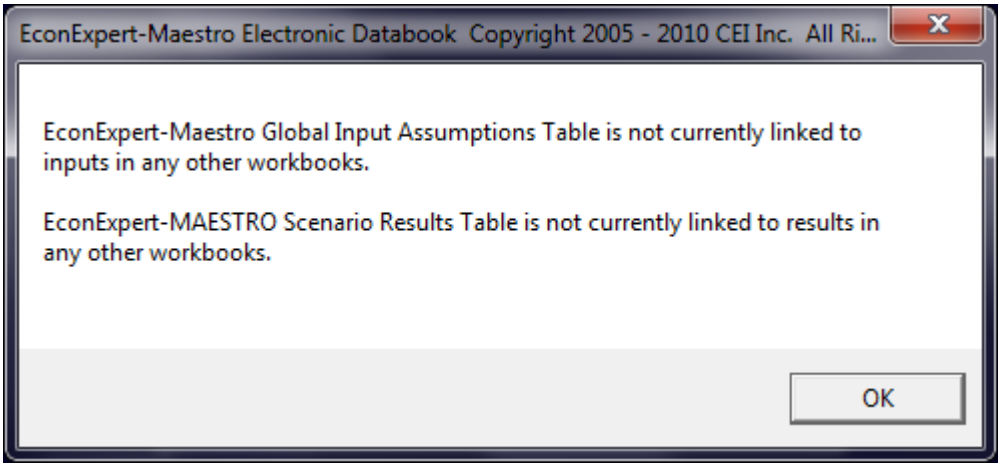


Figure 24 Linking status with other workbooks

13. The newest version of EconExpert (V14) will inform you of the need of updating all your previous EconExpert Models to maintain forward compatibility. To continue to display the message at each start up, select *Yes*, otherwise select *No*:

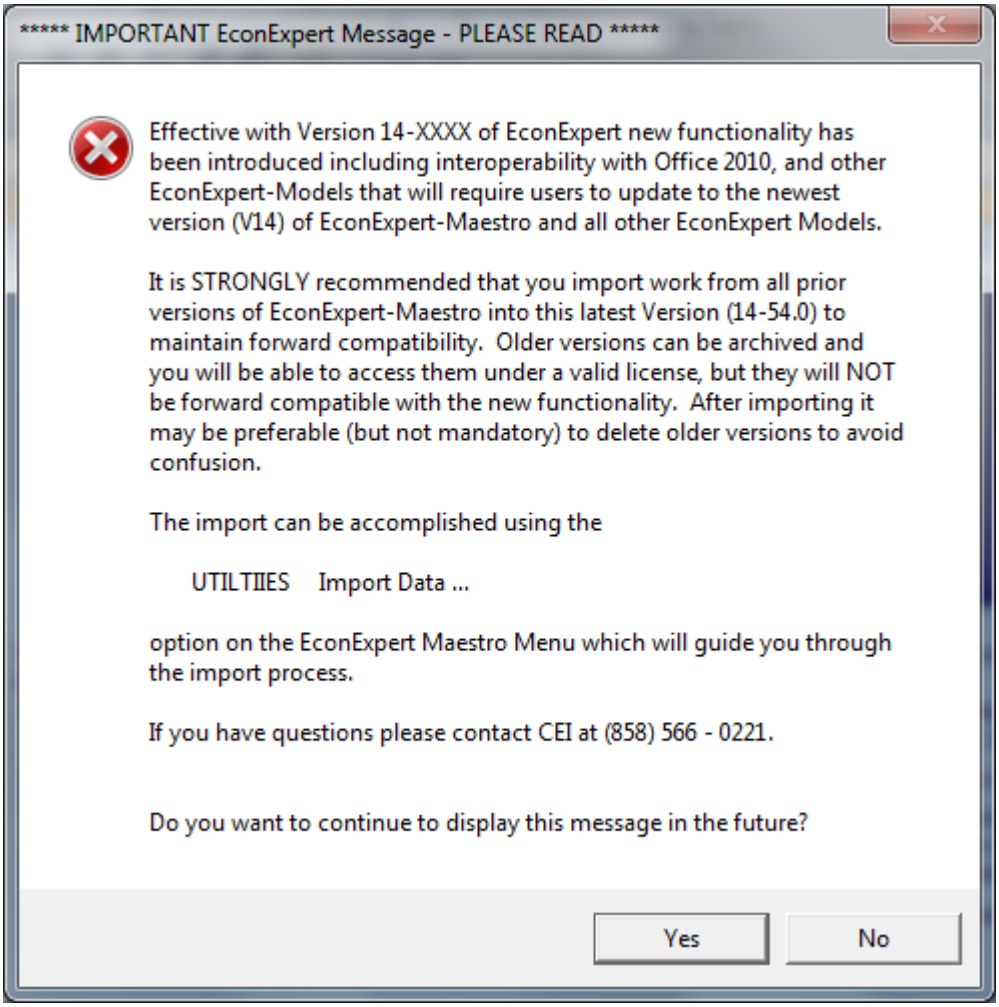


Figure 25 Forward compatibility instructions

If you no longer want to view this message, select *No* and the message will be suppressed in all versions of EconExpert on that computer.

14. The model has been fully initialized and is ready for use. You will now be transferred to the MAESTRO Title Screen.

NOTE	Copies of the spreadsheet will not work properly on computers that do not have licensed authorized installations. If you forward copies of the model to others who do not have an active license, or you try to use the model on another computer, that copy of the model can be enabled by obtaining the appropriate License Authorization Codes from CEI. Once entered, the codes will fully enable the use of MAESTRO on that computer for the subject license period. Also, the MAESTRO does not have the Enable model option; however, the model will not link to other workbooks and will not assimilate results from other workbooks unless the subject license is valid.

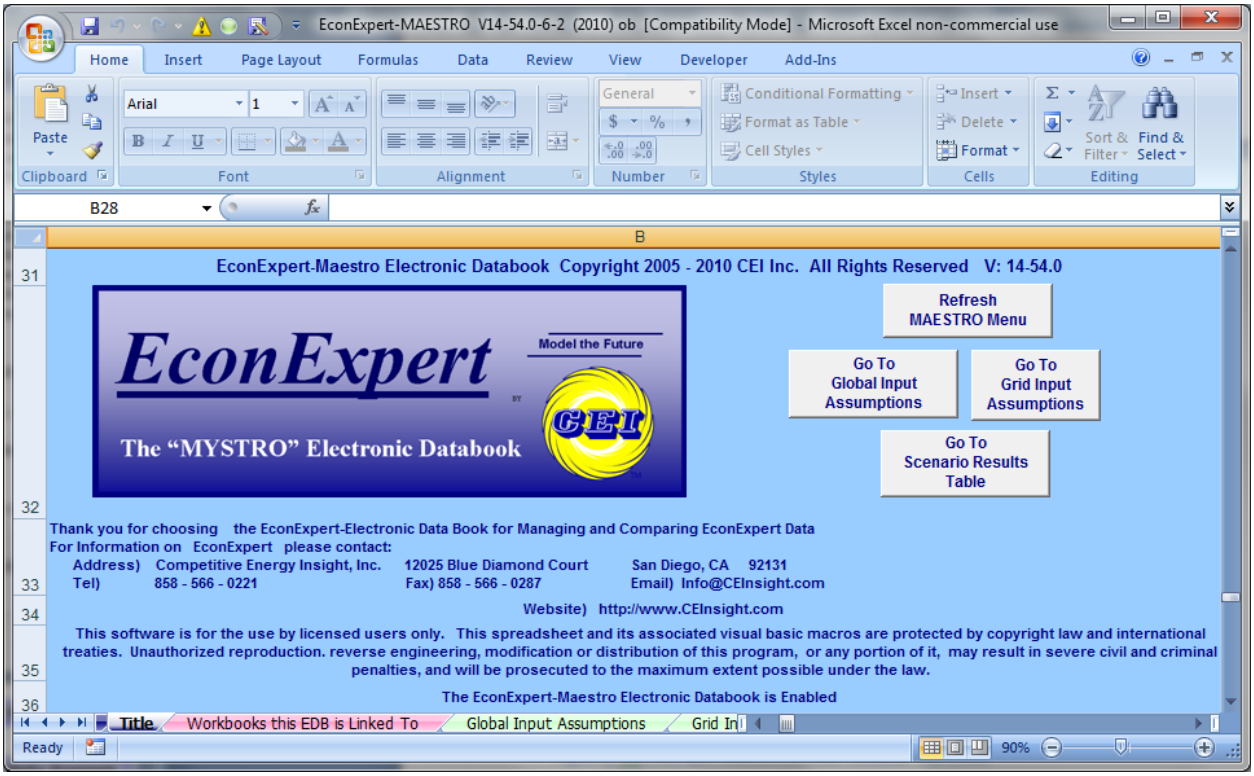


Figure 26 The MAESTRO Title Screen

Congratulations! You are now ready to use MAESTRO!

NOTE	EconExpert will create the folder *C:\EconExpert Files*. This is where the now installed model will be saved and where you will also save all other Add-Ins to EconExpert such as sensitivity charts and databases where applicable. Note also that when you run the models in the future, you will be able to rename the models you create and save them to any folder or storage media. All will run on the licensed PC.

Multi License Installation

The file name extension on the Multi-License Installer (MLI) file is *.dxe* so that the tool will not be blocked by your firewall. In order to use this file, it will be necessary to change the extension to *.exe*.

This file will provide you with a 6 digit code. Contact CEI by telephone at 858-566-0221 and provide the code. We will then provide you with a 6 digit response code to finalize the installation on your computer. Save the Multi-License Installer as it can be used later to repair your installation should a problem arise.

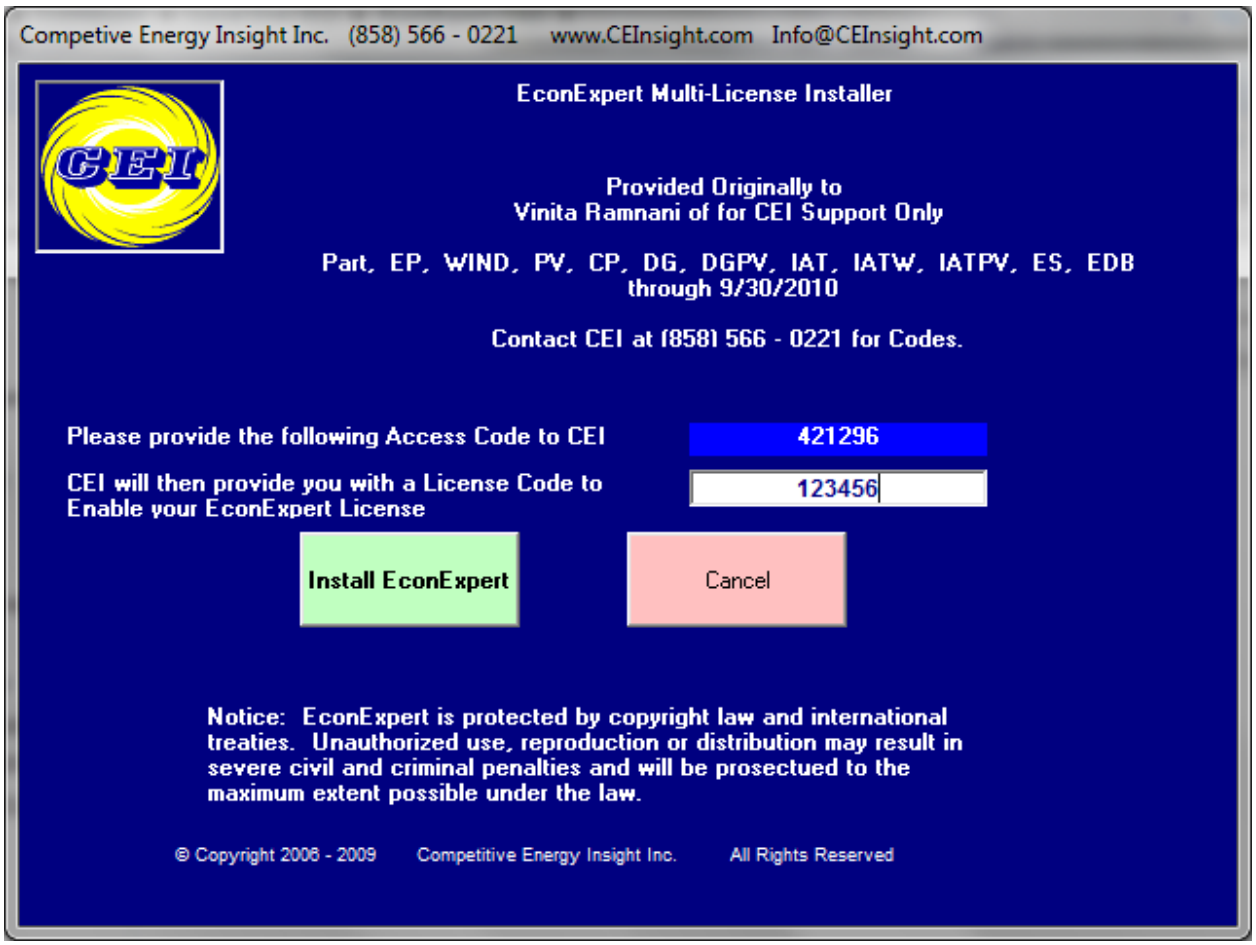


Figure 27 Multi-License Installer dialog

The MAESTRO Command Menu

MAESTRO includes a Custom Command Menu that in Excel 2002 or 2003 appears on the Excel Menu Bar to the right of or below the Excel's menu Help Option. In Excel 2007 / 2010 the EconExpert menu will appear under the *Add-Ins* option on the ribbon bar.

The MAESTRO Command Menu provides you with control of the MAESTRO model's Wizards and Special Functions. The menu will be added to the Excel Menu bar each time that you open the MAESTRO model and will be deleted each time you close it. If you become locked up in Windows when MAESTRO is opened, it is possible that the menu will appear when you reopen Excel even if EconExpert is not opened. To delete the extraneous menu simply reopen and then close the MAESTRO model.

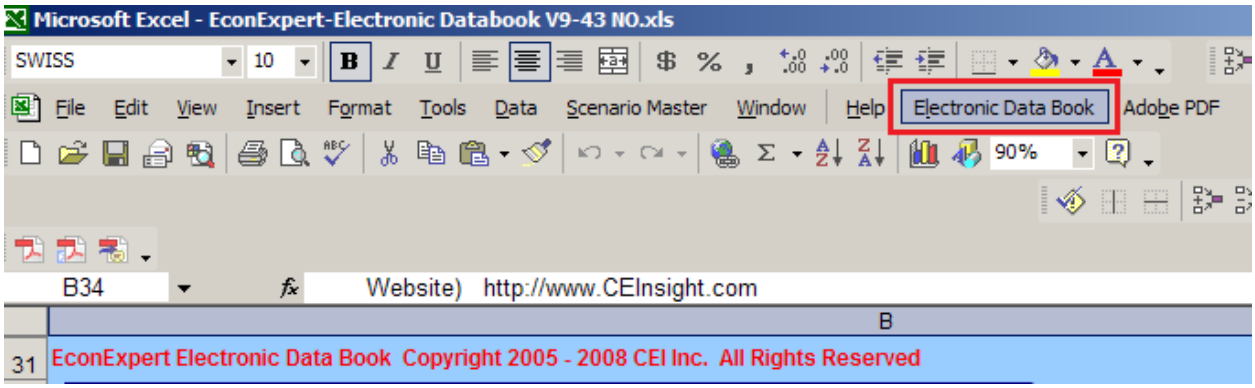


Figure 28 Excel 2003 MAESTRO Menu

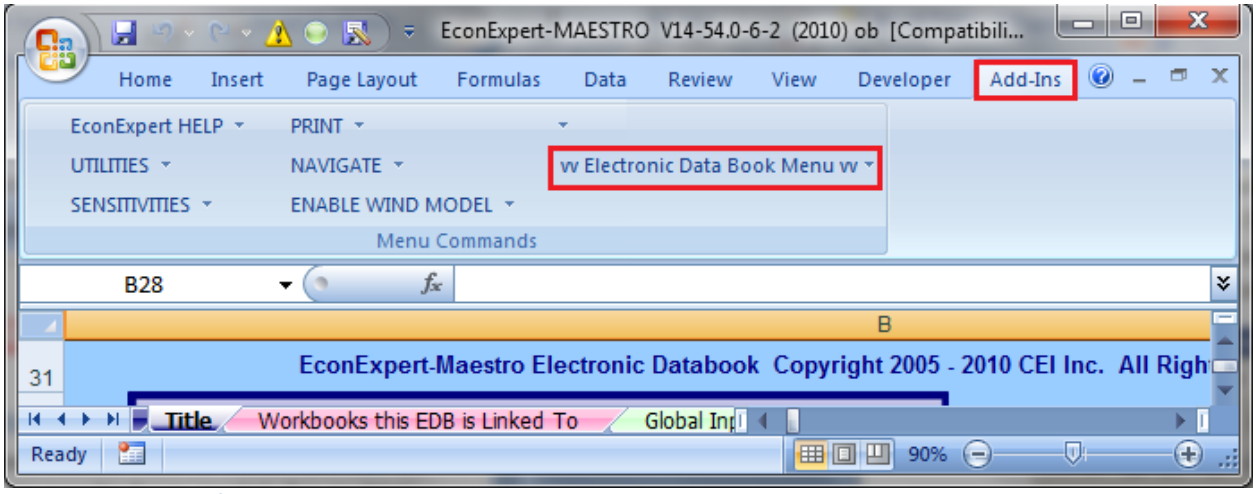


Figure 29 Excel 2007 / 2010 MAESTRO Menu

When you click on the MAESTRO command menu, you will reveal the sub-menu options:

Figure 30 The MAESTRO Sub Menu

Enable MAESTRO Electronic Databook

Before using the EconExpert Databook models, the content has to be enabled under an authorized license.

Navigate

Navigate is an automated GOTO that will take you directly to the various reports and report sections in the MAESTRO model. As an alternative to the conventional approach of selecting worksheet tabs (located on the bottom of the Excel Screen) and then manually scrolling around the sheet in the model, the *Navigate Menu* can be used to view a particular report or section of a report in the model. Options provided on this menu include:

Figure 31 The MAESTRO Sub Menu

- Global Input Assumptions

The *Global Input Assumptions* sheet allows you to link individual inputs from the databook into other workbooks. Each column in this sheet represents a case, project or scenario. Cell D1 on this sheet is where the user can select the number of the case used to populate the linked workbooks. The *Single* and *Batch Input Linking Wizards* provide an automated way to link inputs in the EconExpert-MAESTRO to other models. Examples of individual inputs include a cost item and its associated escalation rate, a fixed interest rate or a discount rate. These types of inputs are typically used in the *Global Inputs Sheet* in the EconExpert financial models.

- Grid Input Assumptions
  The *Grid Input Assumptions* sheet allows you link multiple inputs or scenario strips to other workbooks. The *Grid Input Wizard* will guide you through the *Grid Input Assumptions* and *Grid Selections Sheets*. Examples of scenario inputs include alternative forward price curves, escalation curves, performance curves, etc. These types of inputs are typically used in the Annual Inputs, Monthly Inputs or Data Conversion Sheets in the EconExpert financial models.

- Grid Selection
  The *Grid Selection* sheet allows you to assign the alternative scenarios populated on the *Grid Assumptions Sheet* to individual cases that have been linked to other models.

- List of Scenarios
  This sheet lists all of the cases or scenarios saved in the current MAESTRO model.

- Scenario Results Table
  This sheet is where results from the respective scenarios are documented and accessed from a list of specific results targeted by the user. Using wizards the user can select which results to link to. Since Maestro is only actively linked to one .

- Scenario vs. Base Case
  This sheet provides a comparison of any selected case with all of the other cases modeled.

- Software License Agreement
  This displays the MAESTRO Software License Agreement. User's of the model are obligated to comply with the terms of the Software License Agreement.

- Title Sheet
  This is the sheet in the model that includes the blue EconExpert logo. The user can obtain CEI contact information and can link directly to the CEI website by clicking on the EconExpert logo.

Input Linking and Results Reporting Wizards

The Input Linking and Results Reporting Wizards are used to "link" or join MAESTRO with other spreadsheets. The Wizards are described later in the User's Manual in detail.

Data Management and MAESTRO Import

As titled, the Data Management feature on the menu is used to manage data in the MAESTRO. This includes:

- Deleting old cases purging,
- Importing of data from earlier versions of Maestro into the newest and latest version, and
- Reporting of results in the model after respective scenarios are set up using the Wizards.

Sheet Protection

Most of the individual sheets in the MAESTRO model are protected, but without passwords. These sheets can be unprotected or protected as a group using the menu option. They can be individually unprotected or protected using the macro buttons at the top of the applicable sheets.

Software Licensing and Registration

This feature is used to enable or extend your MAESTRO License.

MAESTRO Help

Using this menu, you can enable or disable certain EconExpert-MAESTRO messages. You can also access the tutorial.

MAESTRO Special Functions

Complementing the Command Menu and macro buttons located throughout the model, certain features available through EconExpert's Visual Basic can be accessed by *right clicking* on the mouse.

The EconExpert-MAESTRO Special Functions are:

- *Suppress Certain EconExpert-MAESTRO Messages and Warnings/Enable All EconExpert-MAESTRO Messages and Warnings*
  Use this option to toggle the appearance of certain messages such as Welcome, Enable Model Warnings, License Expiration, etc.

- *Enable MAESTRO Module*

Use this option to enable the MAESTRO content after the model is saved.

Worksheet Tabs

Tabs at the bottom of the spreadsheet identify the various worksheets and tables in the MAESTRO model. All can be accessed from the Navigate feature on the MAESTRO Command Menu. Worksheets are organized into the following categories:

- Administrative
- Inputs
- Results Reporting
- Analysis

Administrative Sheets

These sheets provide the user information about the model, holding bins, and other information that support the use of the model.

- ### MAESTRO License

  The License Sheet provides the Software License Agreement. MAESTRO may only be used under the terms of the applicable License Agreement and the user must acknowledge their acceptance of those terms in order to enable the model. The terms of the software license should be read carefully BEFORE using the model. Prior to the first use of the model the user must accept the license agreement by clicking on the button labeled "I Have Read and Accept to the Terms of the MAESTRO License", located at the end of the License Agreement.

- ### Title Sheet

  The Title Sheet includes the MAESTRO and CEI Logos, and notification of the product copyright. Contact information for CEI is also provided. Clicking on the Logo on the title sheet will link you to the CEI website www.CEInsight.com.

- ### Workbooks this MAESTRO is Linked To

  This sheet lists all of the workbooks the EconExpert Electronic Databook is currently linked to.

Input Sheets

These sheets enable the user to link workbooks and link formulas in Excel.

- ### The Global Input Assumptions Sheet

  The Global Input Assumptions Sheet is the first interface point in the MAESTRO. This sheet is used to direct the MAESTRO what individual data inputs you want to send link to other spreadsheets, which can include any EconExpert model or your own custom spreadsheets.

The Global Input Assumptions Sheet can be populated manually, or using the Single or Batch Input Linking Wizards. The MAESTRO utilizes Single and Batch workbook linking to associate inputs listed in the MAESTRO with other target spreadsheets. The Batch wizards are preconfigured to interface automatically with the Global Input Sheets in the various EconExpert Financial models. The Single Input Wizard can be used to link inputs to any target spreadsheet.

NOTE	In order for Links to work properly, the MAESTRO module and all linked workbooks must be simultaneously opened. It is highly recommended that you save all linked workbooks and Maestro in a common folder so that you can most easily maintain the integrity of the linked workbooks.

When linking from single inputs to the Global Input Assumptions sheet, the formula format that EconExpert-Maestro uses is as follows:

=OFFSET([Top Left Corner of Data Table], [Line Number on Global Input Assumptions Sheet], [Case Number])

where:

the *path* and *filename* are surrounded by square brackets "[]"
the *sheet name* and *cell address* are separated by an exclamation mark "!"
and the *path*, *filename*, and *sheet name* are surrounded by single quotes " ' ".

Using this technique, inputs listed in the MAESTRO can be continuously linked or joined to other workbooks that the MAESTRO is linked to. These links can be automatically established using the Maestro Global Input Wizards, or can be set up manually by copying and pasting the correct formula into any unprotected cell in an Excel Workbook.

Hazards to be Aware of When Linking Workbooks

IMPORTANT	Some hazards to be aware of when linking workbooks:
	Inputs entered in the MAESTRO will only be refreshed in a target workbook when the target workbooks and MAESTRO are opened at the same time.
	Changes made to target workbooks that are linked to the MAESTRO should only be made when then linked MAESTRO is also opened, otherwise it is possible that links between the models can be corrupted.
IMPORTANT	When renaming linked workbooks be sure that the links are updated in all of the related workbooks. The safest way to ensure that all Links are correctly maintained is to save each of the workbooks twice, cycling through the workbooks in sequence (i.e. save workbooks 1,2,3 in order and then save workbooks 1,2,3 in order again). Repeating the save in this manner will ensure that all paths and file names are recorded across ALL linked workbooks.

Examples that will result in corruption of links include:

- A manual change or overwrite of a linked formula - Changing the formula of a link will change its calculated result.

- Insertion of a row or column in the target model - If an inserted row or column results in a change in the cell address of a linked cell, Excel will only recognize the associated link changes if both the MAESTRO and Target Workbook(s) are both open when the row insertion or deletion is made, and will only remember the changes if both the MAESTRO and Target Workbook(s) are saved after the changes are made.

- Changing the name of a Linked Workbook- Since Links between workbooks are tied to specific workbook names, changing the name of a workbook or resaving the workbook to a different name will change the link. If the MAESTRO and Target Workbook(s) are not both saved in a manner that includes the changed path, folder and filename information, then the next time that the workbooks are reopened the link formulas will not contain the correct information and the link can be broken.

Good Practices Rule When Using Links

Repeating the "Important" note just above, the safest way to ensure that all Links are correctly maintained is to save each of the workbooks twice, cycling through the workbooks in sequence (i.e. save workbooks 1,2,3 in order and then save workbooks 1,2,3 in order again). Repeating the save in this manner will ensure that all paths and file names are recorded across ALL linked workbooks.

IMPORTANT	Only ONE scenario (the selected) from the MAESTRO will be populated into a target linked workbook at a time. Updating results for multiple scenarios or cases requires running one of the reporting tools included on the Scenario Results Table.
	Cell D1 in the Global Input Assumptions Sheet (described below) provides the Scenario Number for the current (or active) linked case. Results populated in Linked Workbooks will typically only reflect inputs from that "Selected Scenario". The "Selected Scenario" is identified / input ONLY on the Global Inputs Assumptions Sheet. Other references to the Selected Scenario in MAESTRO are linked to this input location. This is described further below:

Description of Controls

The following is a screen shot of the *Global Input Assumptions* sheet and descriptions of the individual controls:

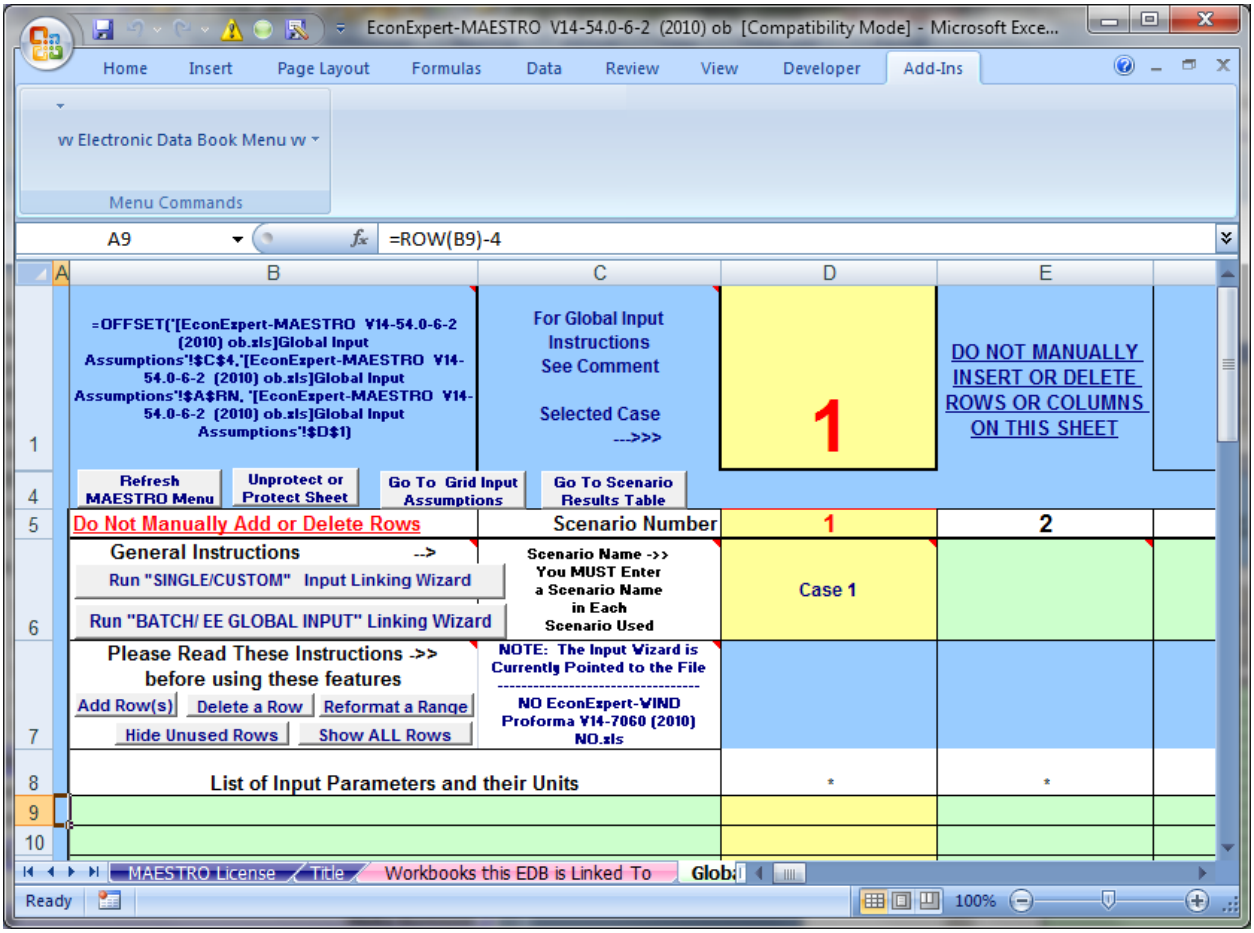


Figure 32 Global Input Assumptions sheet

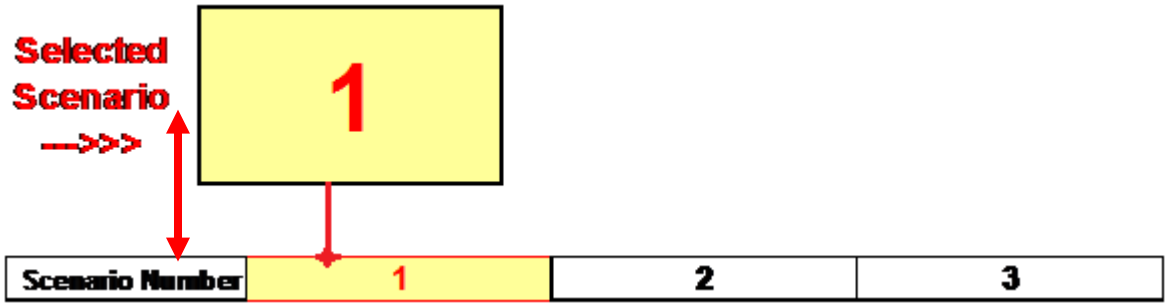


Figure 33 Selected Scenario Input Cell – the column with the Selected Scenario is highlighted in yellow

- *Selected Case or Scenario*
  Cell D2 in this sheet shows which scenario is currently selected. Each column in the Global Input Assumptions Sheet represents a *Case* or *Scenario*. This determines which group of inputs is currently populated into the spreadsheets that are linked to the MAESTRO. When you change the entry in this cell, the respective Case Number/Column in the MAESTRO will highlight in yellow, indicating that that is the selected scenario and the associated linked inputs will be updated to reflect that scenario. This is the only sheet where the user can select or change the active Scenario number. Other sheets reflect this cell by reference.

- *Scenario Number*

  Row 5 in the sheet lists the respective scenario numbers, each column representing a different scenario.

Figure 34 Other macro buttons on the Global Input Assumptions sheet

- *Refresh MAESTRO Menu*
  The Refresh Menu button is on the top of every sheet of the model. This button replaces and updates the MAESTRO menu with a new one, linked to that respective copy of the model. You can refresh the menu any time. This macro button will re-enable the model under a valid license and will point the Maestro Menu to the active Maestro model.

- *Unprotect or Protect Sheet*
  The Global Inputs Assumptions sheet is protected, but without a password. Users can unprotect this sheet by clicking on this button, allowing you to reformat cells on the sheet. You can unprotect this sheet and reformat cells as desired, however, it is recommended that you not insert or delete or column s rows on this sheet as such can interfere with the sheets macros. If you need to make these kinds of changes, please contact CEI and we can provide you with instructions on how to properly make these types of modifications without disrupting the performance of the MAESTRO model. Sheets can also be protected or unprotected from the MAESTRO Command Menu.

- *Go to Grid Input Assumptions*
  This takes you to the Grid Input Assumptions sheet, which can also be accessed under navigate on the command menu, or by clicking on the tab with the same name.

- *Go to Scenario Results Table*, which can also be accessed under navigate on the command menu, or by clicking on the tab with the same name.
  This takes you to the Scenario Results Table sheet.

Figure 35 Linking Wizard buttons on the Global Input Assumptions sheet

- *Run "SINGLE/CUSTOM" Input Linking Wizard*
  This option allows you to link individual inputs from any spreadsheet to the electronic databook one at time. This feature is described in detail in the following section(s) and can be used to link to any input in any spreadsheet.

- *Run "BATCH/EE GLOBAL INPUT" Linking Wizard*

This option allows you to link batches of variables to the located in EconExpert Global Inputs Sheets to the electronic databook. This feature is described in detail in the following section(s). This Wizard is preconfigured to recognize all of the Global Inputs in the various EconExpert Financial Models.

- *Scenario Name*

  Each populated column in the Global Input Assumptions Sheet MUST be assigned a Scenario Name. This name is used by the MAESTRO to designate labels for the respective scenarios.

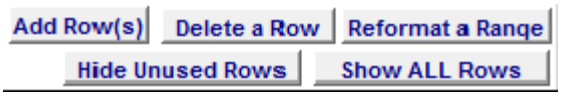


Figure 36 Row management buttons on the Global Input Assumptions sheet

- *Add a Row(s)*
  When adding a row, please make sure that the linked worksheets are open. Also save the updated databook and worksheets.

- *Delete a Row*
  When deleting a row, please make sure that the linked worksheets are open. Also save the updated databook and worksheets. If you delete a row, it might be necessary to go to any linked model and delete the associated link.

Warning:	PLEASE DO NOT MANUALLY ADD OR DELETE ROWS OR COLUMNS ON THIS OR ANY OTHER SHEET IN THE MAESTRO MODEL AS SUCH WILL DISRUPT THE PERFORMANCE OF MAESTRO. Where appropriate, CEI has included automated routines that perform the addition or deletion of rows to MAESTRO Tables that include all of the necessary configurational features necessary to preserve MAESTRO Functionality.

- *Reformat a Range*
  This allows you to select a range of rows and reformat the data.

NOTE	If desired, it is OK to unprotect and manually reformat cells (using the cells formatting features on the Excel Command Manu) on sheets in MAESTRO that are protected without passwords as long as you DO NOT CHANGE CELL FORMATS TO LOCKED and DO NOT CHANGE CONDITIONAL FORMATTING OR DATA VALIDATION SETTINGS.

- *Hide Unused Rows*
  This option allows you to hide all the input rows that are not currently being used. When executed, options will be also provided to show or hide titles associated with individual sections of the Linked Global Inputs Sheet.

NOTE	If desired, it is OK to manually hide or unhide rows on any of the MAESTRO Sheets that are protected without a Password.

- *Show ALL Rows*
  This allows you to display all rows, used or not.

- *List of Input Parameters and Their Units*

Starting on Row 8 of the MAESTRO is where the user assigns the input categories that the model will link to other EconExpert models. In column B, the user provides the name of the input and the units it is expressed in. In column D, the user assigns the assumptions that will apply to each input and scenario.

Multi and Single Input Linking Wizards

IMPORTANT	Prior to linking EconExpert-MAESTRO Electronic Databook to any other models it will be necessary to have the MAESTRO opened and enabled, and to have opened and enabled any copies of other spreadsheets that you wish to link the model to.

Inputs can be linked manually by copying the formula provided in Cell B1 to any other spreadsheet and then by editing the *RN* at the end of the formula with the respective *Row Number* in the Global Input Assumptions Sheet. Or, links can be established automatically using the Multi or Single Input Linking Wizards.

The Input Linking Wizards are automated tools used to establish links between the MAESTRO inputs sheet and the respective models you want to link to.

The Input Linking Wizards can be initiated by:

- Clicking on the macro buttons located in cell B6 of the *Global Input Assumptions* sheet or

- Selecting the *Electronic Data Book Menu > Input and Results Linking Wizards > BATCH/EconExpert Input Linking Wizard or SINGLE/CUSTOM Input Linking Wizard* option on the Custom Command Menu.

The example shown here is for linking the capacity input to the EconExpert-WIND model, but is representative of the procedure followed for any EconExpert workbook.

Using the Multi Input Linking Wizard

To link to multiple inputs, click on the *Run BATCH/EE GLOBAL INPUT Linking Wizard* macro button on the *Global Input Assumptions* worksheet or select the *Electronic Data Book Menu > Input and Results Linking Wizards > BATCH/EconExpert Input Linking Wizard* menu option.

If there are no workbooks currently open, the following message will be displayed:

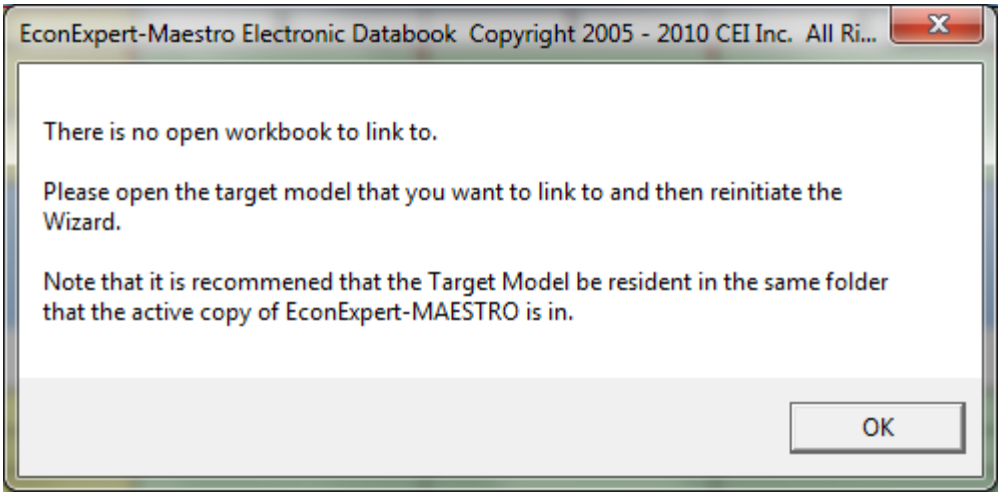


Figure 37 Multi Input Linking Wizard - No open workbook notification

Click *OK* and open the model you would like link to.

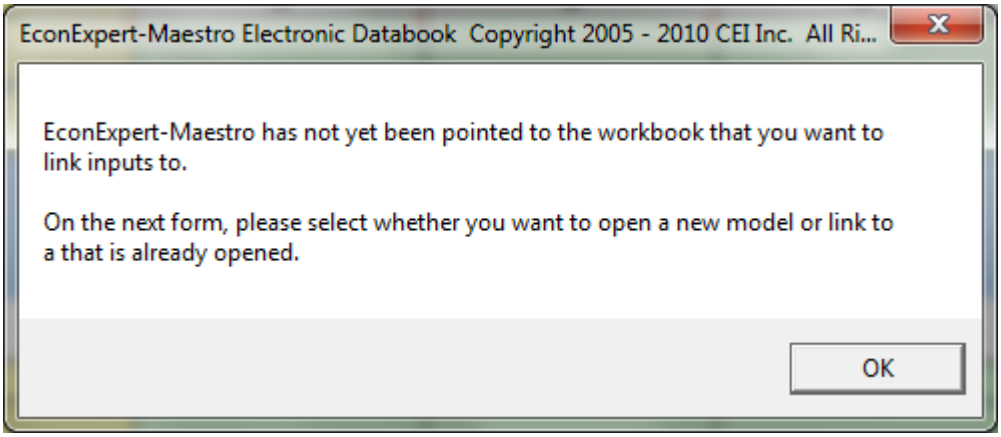


Figure 38 Multi Input Linking Wizard - Workbook not selected as yet

Select *OK*, and the following dialog will be displayed:

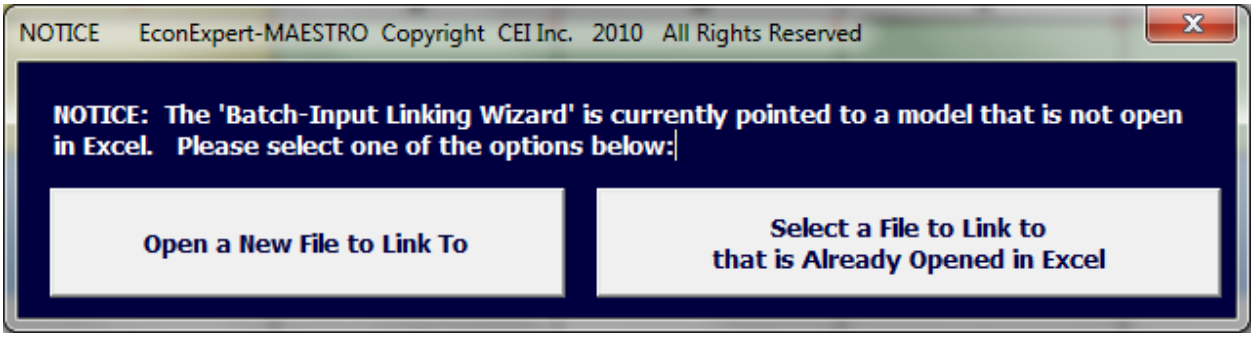


Figure 39 Multi Input Linking Wizard - Link to new file or one that is already opened?

Click on *Open a New File to Link To* if you want to link to an unopened model or click on *Select a File to Link to that is Already Opened in Excel* in order to a currently open model:

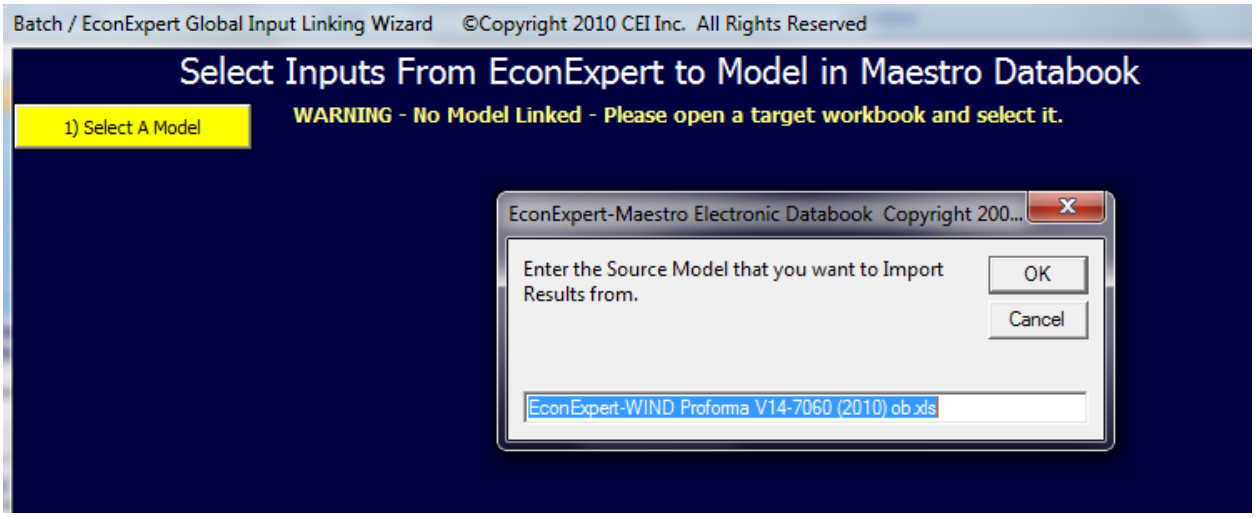


Figure 40 Multi Input Linking Wizard - Select target workbook

The BATCH/EconExpert Global Linking Wizard consists of the following steps:

1. Select a model you would like to import data from, and the following dialog will be displayed:

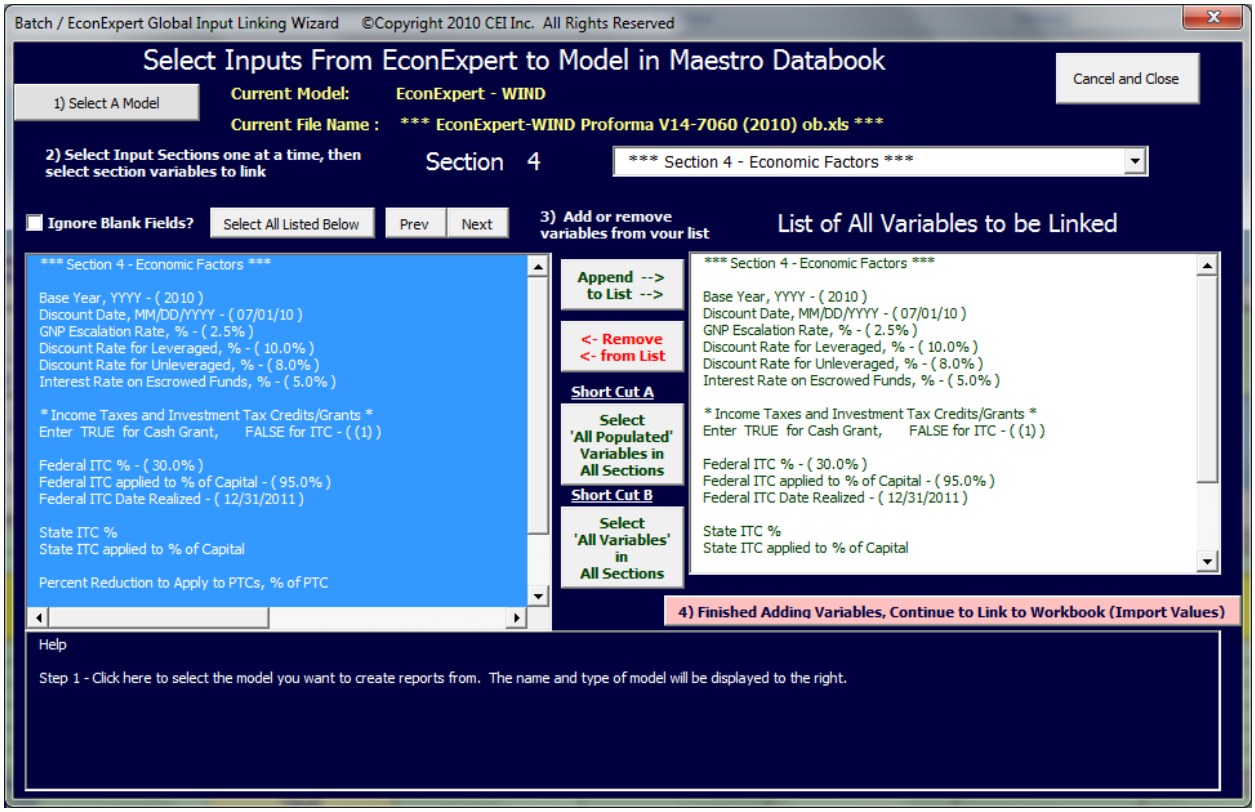


Figure 41 Multi Input Linking Wizard - Select variables

2. The variables you want to list in the databook can be selected using several methods:

    a. Individual variable in a section:

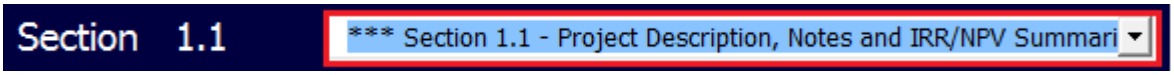


Figure 42 Multi Input Linking Wizard - Selection of variable section

Figure 43 Multi Input Linking Wizard - Selection of individual variable

b. Group of variables in a section:

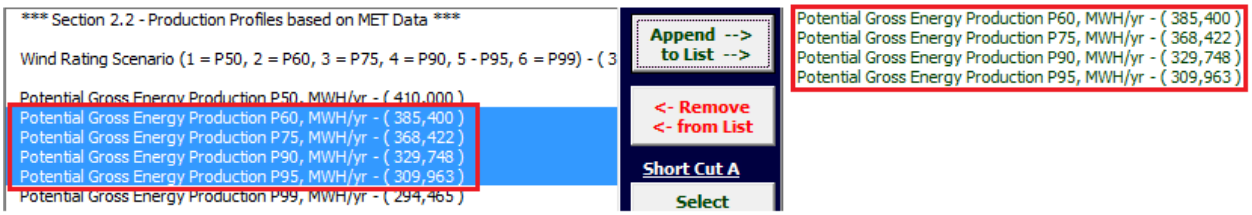


Figure 44 Multi Input Linking Wizard - Selection of group of variables

c. All variables or only variables that are already populated:

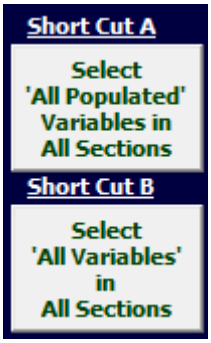


Figure 45 Multi Input Linking Wizard - Selected of all or only populated variables

3. Use *Append to List* to insert any highlighted items on the left to the bottom of the list on the right and *Remove from List* to remove items previously added.

NOTE	All inputs will be imported into the databook as values. Any formula links will be converted into their current values.

Figure 46 Multi Input Linking Wizard - Append variable to list or remove variable from list

4. When you are ready to populate the *Global Input Assumptions* worksheet with the selected variables, click on this button. If there are already inputs listed in the *Global Input Assumptions* sheet, the following dialog will be displayed:

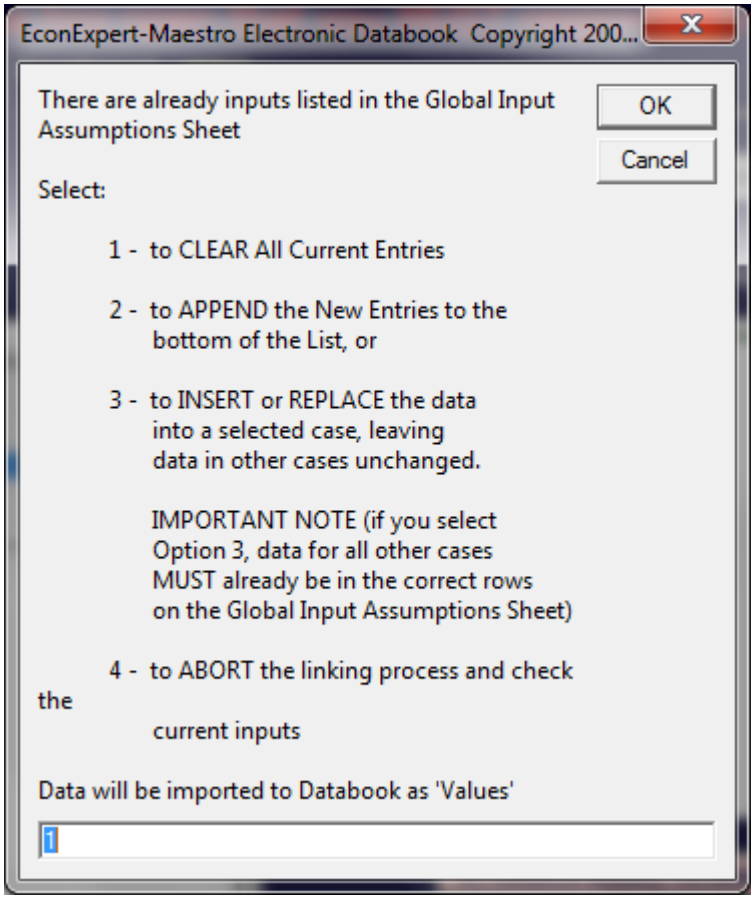


Figure 47 Multi Input Linking Wizard - Selection of variable placement

Select the appropriate option and click *OK*.

Note that:

Option 1 will clear all current data on the Global Input Assumptions Tab.

Options 2 and 3, will allow you to add input data from an existing model to input data already present in Maestro, either below or to the right or existing inputs.

IMPORTANT NOTE: When adding data, please be aware that all data in any row on the Global Inputs Assumptions sheet MUST be assigned to the same variable in a linked model. This REFERENTIAL INTEGRITY is critical to the proper functioning of Maestro. IF you have questions, please contact CEI.

IMPORTANT NOTE: Cells that are to be linked using the Wizard must have the Protection Attribute set to OFF.

When electing to link to a model, it is possible the input cells you select to link to will have formulas in them (i.e. depending variables). In this case, it may be that the user would like to leave those formulas intact. If any of the selected variables is a formula, the following message will be displayed:

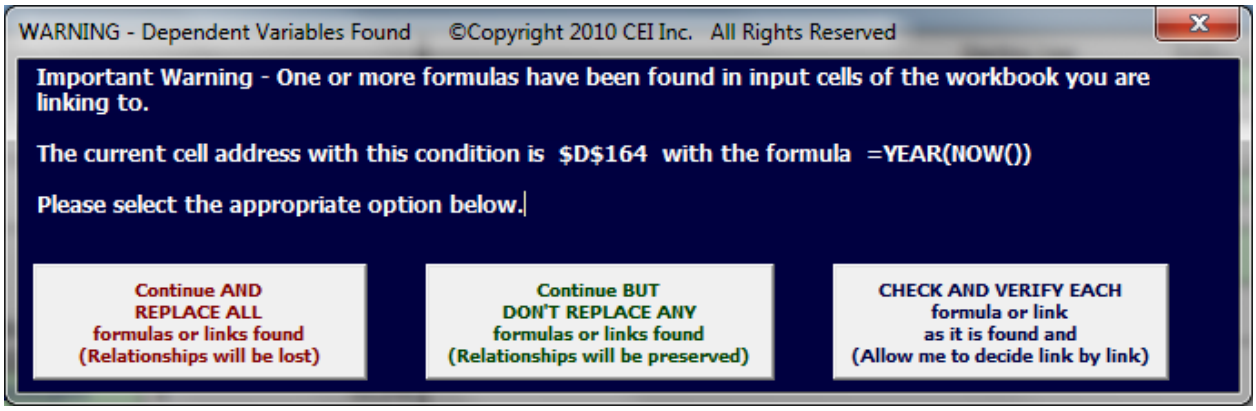


Figure 48 Multi Input Linking Wizard - Selection of formula linking method

Select the first option to replace all formulas or links found with their corresponding values when linking to Maestro. The second option to leave all the formulas intact and will not directly link that cell, and the third option will allow you to to check each cell individually and to decide whether or not to directly link it to Maestro or not.

Once the linking is completed, the following dialog will be displayed:

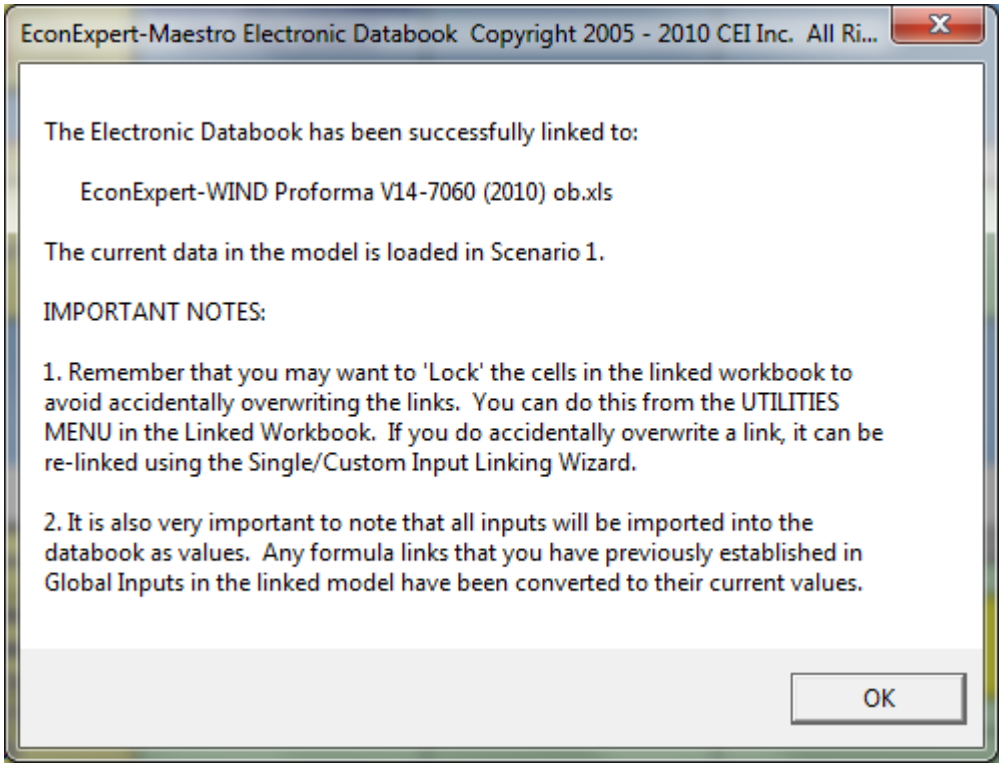


Figure 49 Multi Input Linking Wizard - Linking successful to specified scenario

Select *OK*.

The following screen shows *Case 1* of the *Global Input Assumptions* sheet populated with values from the chosen workbook:

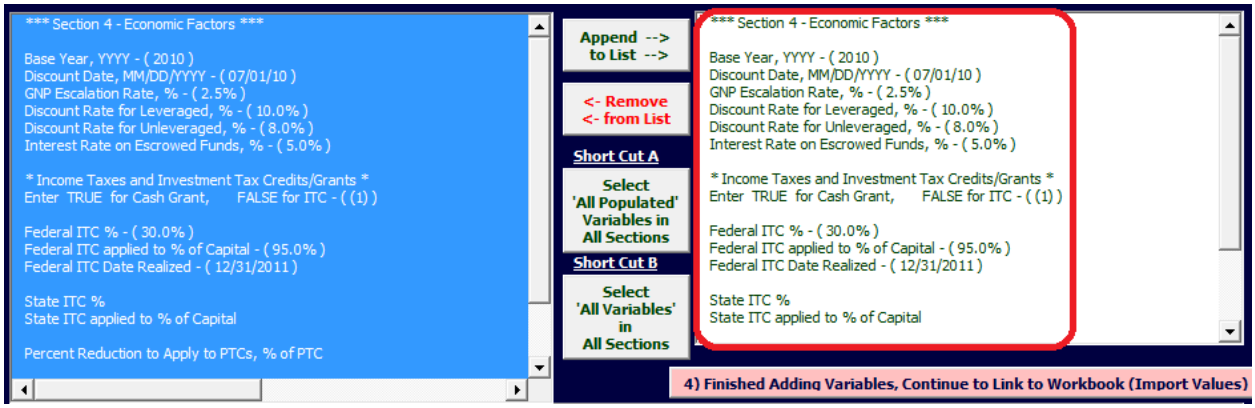
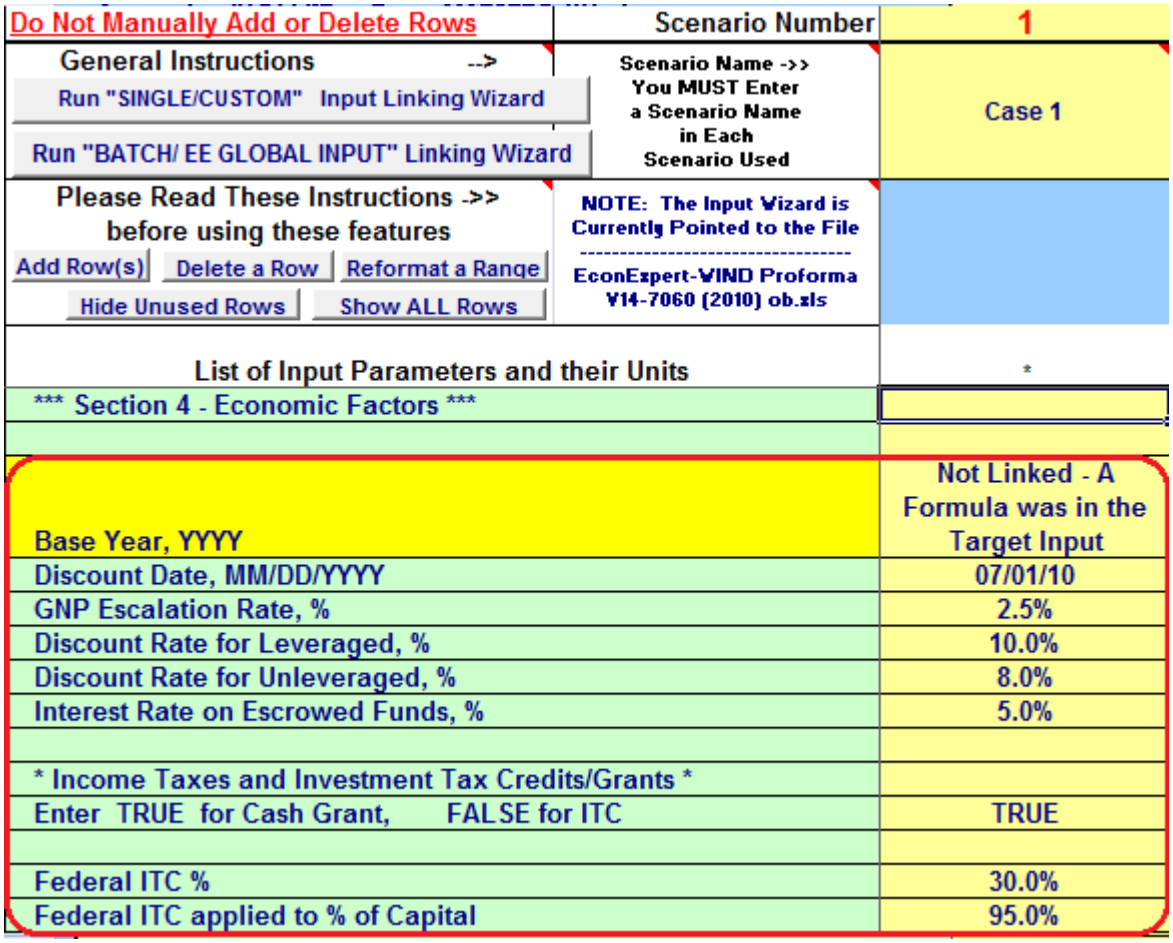


Figure 50 Multi Input Linking Wizard - Selected variables



Do Not Manually Add or Delete Rows	Scenario Number	1
General Instructions --> Run "SINGLE/CUSTOM" Input Linking Wizard / Run "BATCH/ EE GLOBAL INPUT" Linking Wizard	Scenario Name ->> You MUST Enter a Scenario Name in Each Scenario Used	Case 1
Please Read These Instructions ->> before using these features — Add Row(s) / Delete a Row / Reformat a Range / Hide Unused Rows / Show ALL Rows	NOTE: The Input Wizard is Currently Pointed to the File ---------- EconExpert-WIND Proforma V14-7060 (2010) ob.xls	
List of Input Parameters and their Units		*
*** Section 4 - Economic Factors ***		
Base Year, YYYY		Not Linked - A Formula was in the Target Input
Discount Date, MM/DD/YYYY		07/01/10
GNP Escalation Rate, %		2.5%
Discount Rate for Leveraged, %		10.0%
Discount Rate for Unleveraged, %		8.0%
Interest Rate on Escrowed Funds, %		5.0%
* Income Taxes and Investment Tax Credits/Grants *		
Enter TRUE for Cash Grant, FALSE for ITC		TRUE
Federal ITC %		30.0%
Federal ITC applied to % of Capital		95.0%

Figure 51 Multi Input Linking Wizard - variables updated

In this manner, multiple scenarios can be populated from the same or different workbooks.

Using the Custom/Single Input Linking Wizard

Use the Custom/Single Input Linking Wizard to link to any worksheet one value at a time. When you select the *Run SINGLE/CUSTOM Input Linking Wizard*, the following dialog appears:

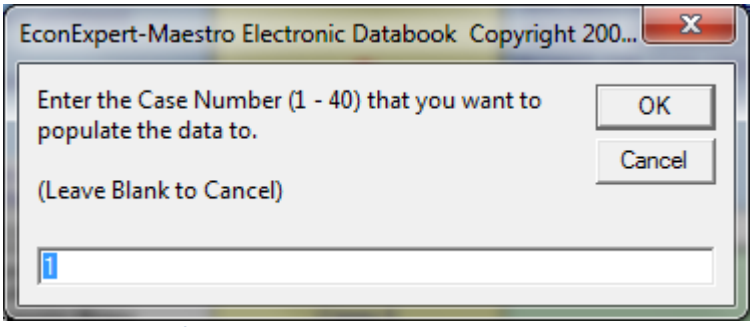


Figure 52 Custom/Single Input Linking Wizard - Select target case number

Select the case number you would like to populate with the values from the chosen worksheet and then click *OK*.

You will then be prompted to either select the data line you would like to use or for MAESTRO to find an empty row:

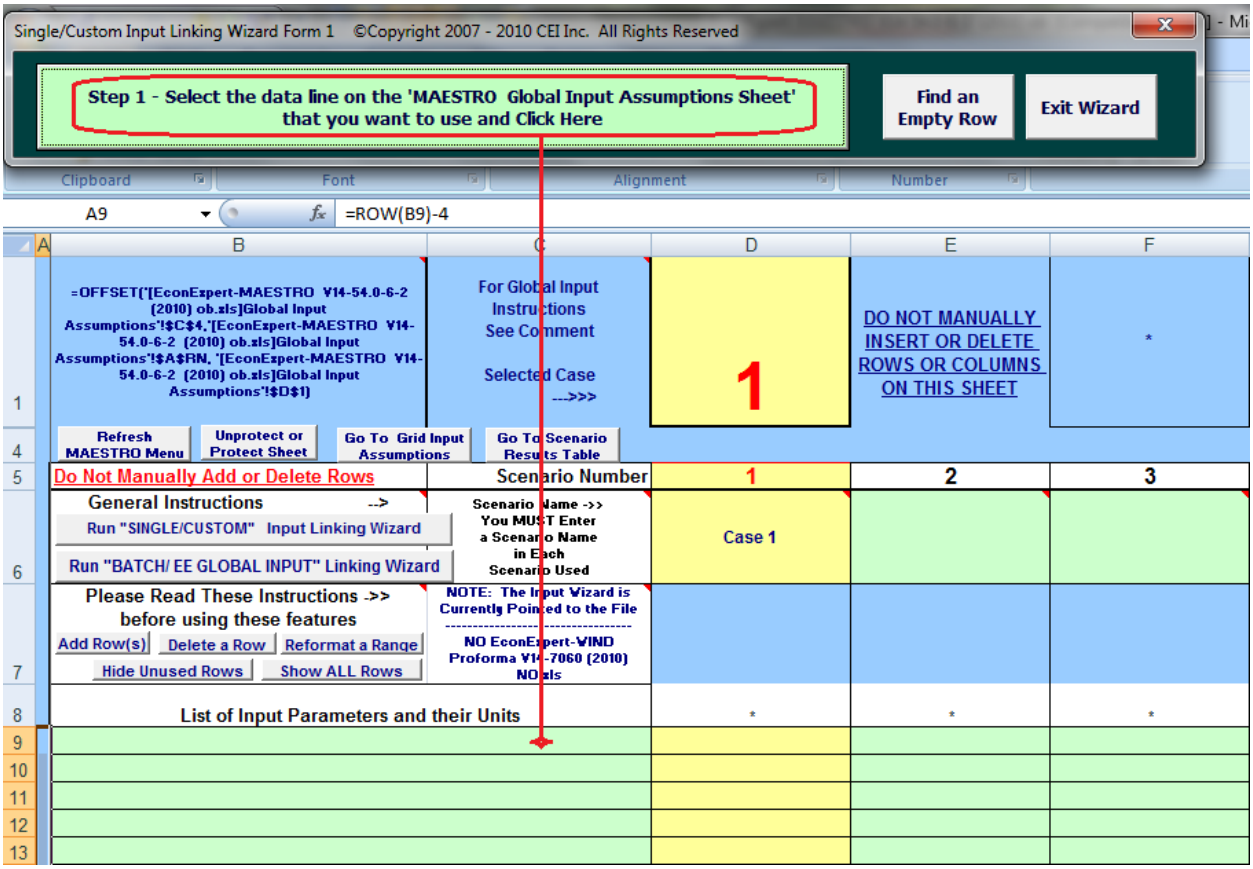


Figure 53 Single/Custom Input Linking Wizard – Select empty row

Simply click on any cell in a row on the Inputs Assumptions Sheet that you would like EconExpert to use for the respective Scenario Input Assumption. If desired, EconExpert MAESTRO will find the first empty row for you. When you have identified the desired row, click on the macro button labeled *Select the data line on the "MAESTRO Global Input Assumptions Sheet" that you want to use and Click Here.* MAESTRO will log the row number (*RN*) to place in the linking formula.

NOTE	As indicated above prior to linking MAESTRO to any other models it will be necessary to have the MAESTRO opened and enabled and to have opened and enabled any copies of other spreadsheets that you wish to link the model to.

MAESTRO will find then find an open workbook to link to. If there are multiple workbooks opened, it will find the most recently linked model.

Next, select the *target* input cell you want to link to and then click on the button shown above to accept that cell entry. In this case the user has selected the *Number of Wind Turbines at the Site*:

NOTE	This can be any unprotected cell in any workbook. If MAESTRO has not opened the correct input sheet for you, you may manually select the correct workbook and worksheet.

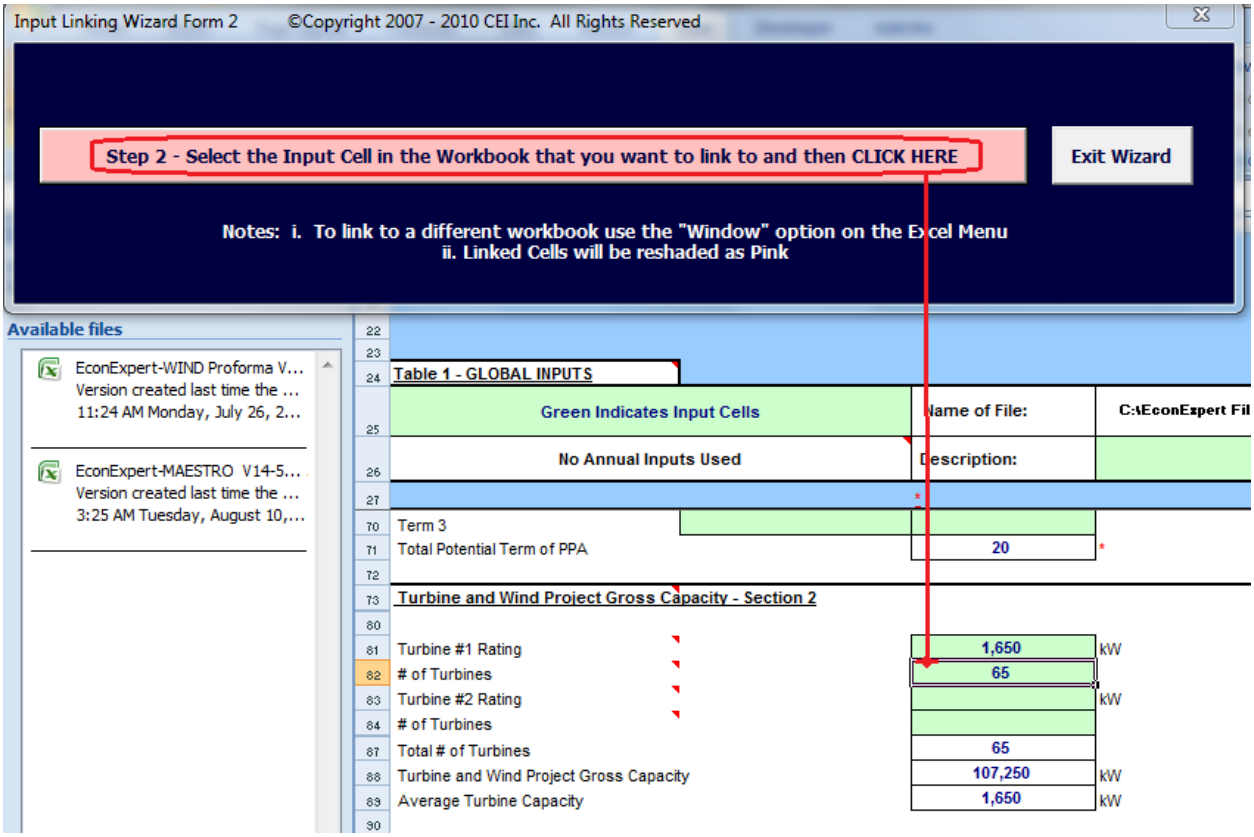


Figure 54 Single/Custom Input Linking Wizard – Select cell to link to

The next dialog will prompt you for the title of the input cell:

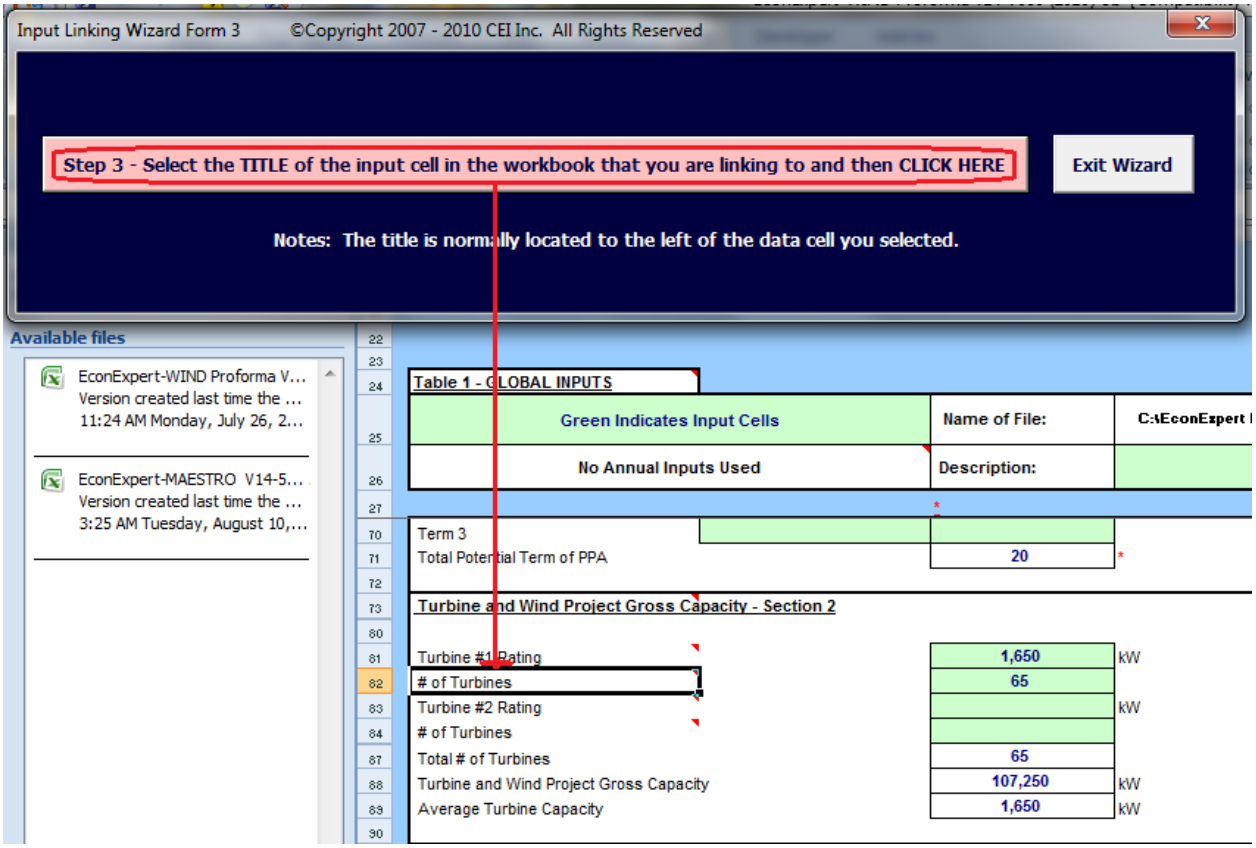


Figure 55 Single/Custom Input Linking Wizard – Select the title of the input cell

Once you have selected the title, you will be given the option of confirming it or entering it manually:

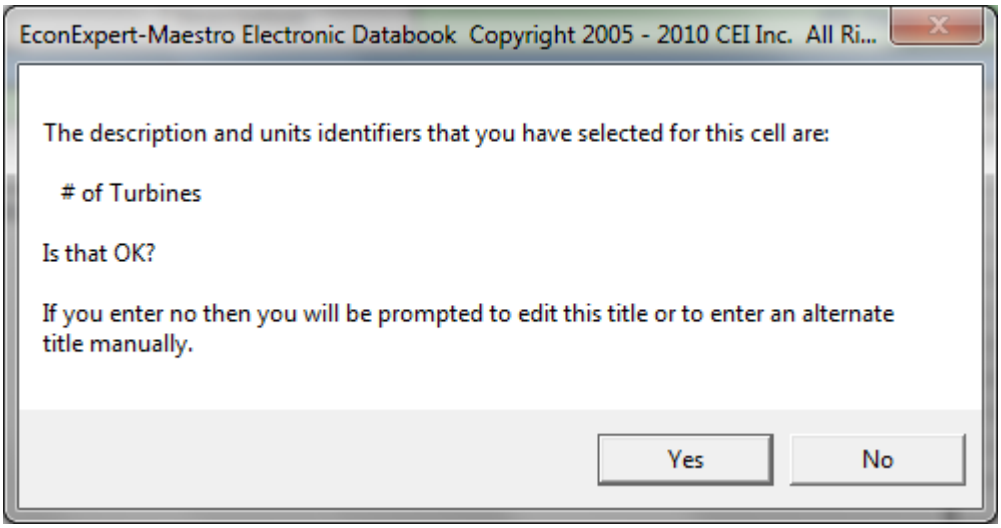


Figure 56 - Custom/Single Input Linking Wizard - Confirm selection of variable

The MAESTRO will automatically insert the formula reference in the target input cell and will reformat that cell to pink identifying that a cell has been linked.

You will then be returned to the *Global Input Assumptions* sheet in the MAESTRO and asked:

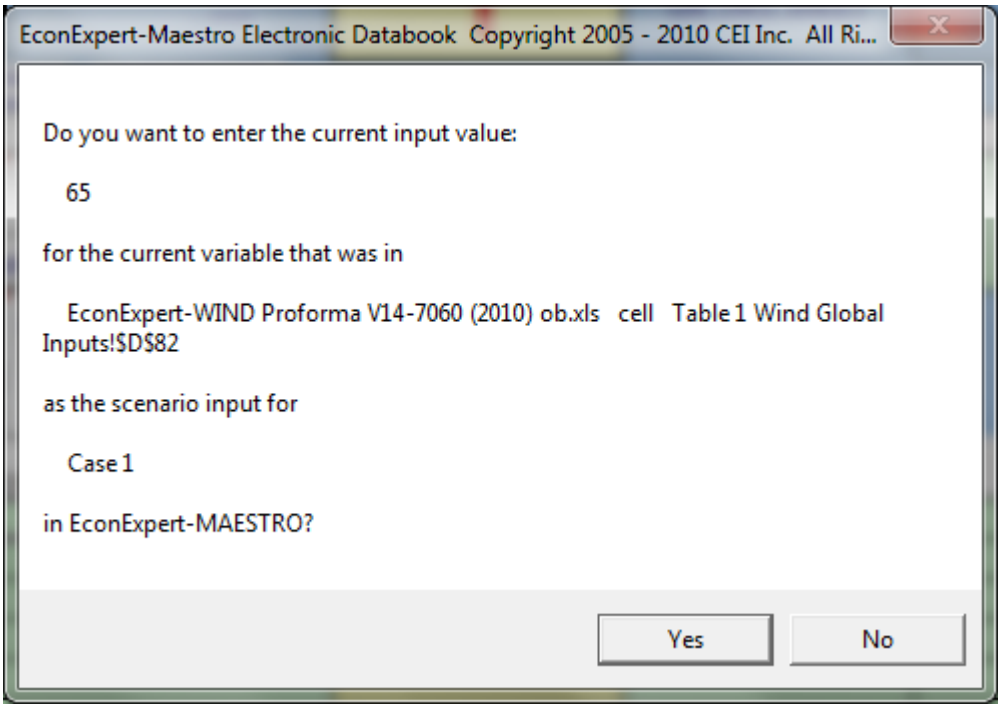


Figure 57 Custom/Single Input Linking Wizard - Base Case Assumption

EconExpert will advise you of the current value of the Target Input (i.e. 65 Wind Turbines) and ask you if you want to use that same value for the base Scenario. Select *Yes* if you want to accept it and that value will be entered for Case 1 in the MAESTRO.

An input box will appear asking you to provide the name and units for the target input cell. Enter the name of the cell and units of the cell that you want to link to.

Next, MAESTRO will ask if you want to link the same input to another workbook?

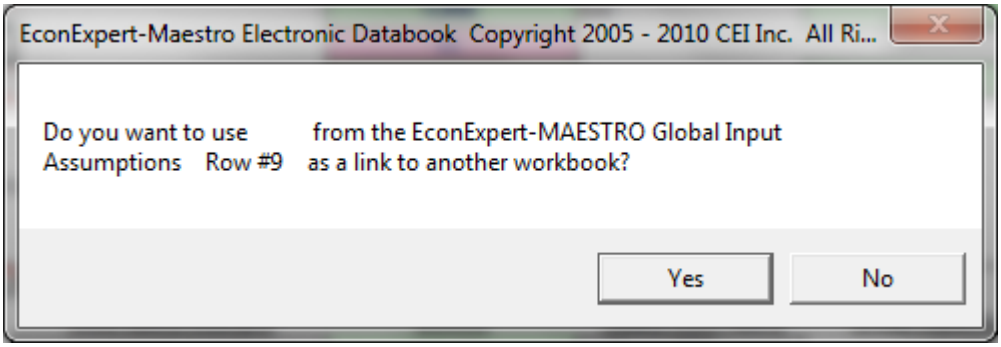


Figure 58 Custom/Single Input Linking Wizard - Link to another workbook?

If you select *Yes* then you will be prompted to select the input cell in the other workbook:

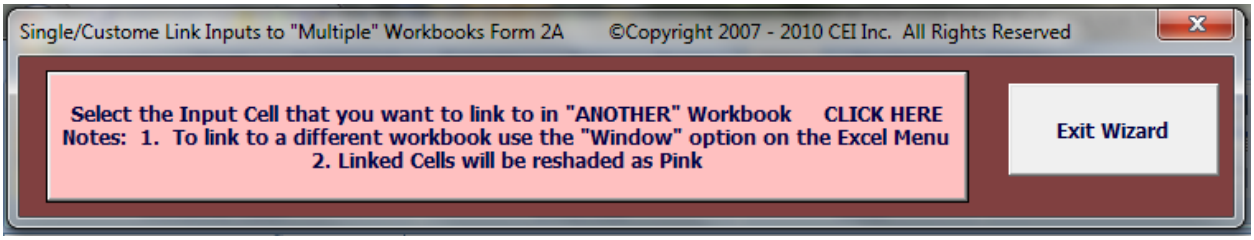


Figure 59 Custom/Single Input Linking Wizard - Selection of cell in another workbook?

If you select *No* then the MAESTRO will ask you if you want to link another Input:

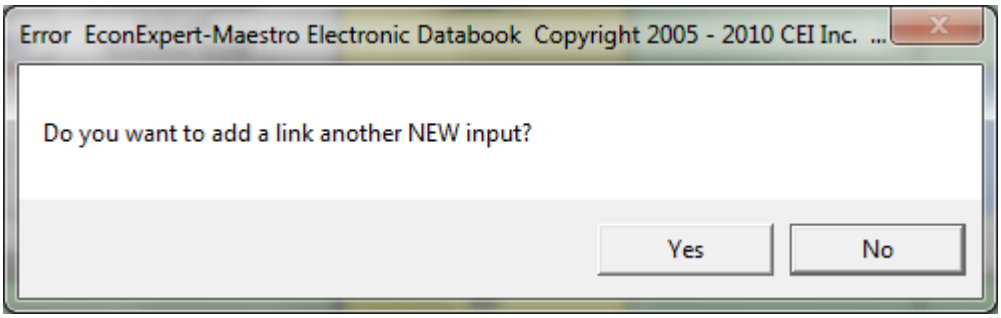


Figure 60 Custom/Single Input Linking Wizard - Link a New Input?

If you select *Yes* then the Wizard will repeat the process from the beginning. If you *No* the Wizard will close, in this case yielding the following input in the MAESTRO which shows in input assumption of *65 Wind Turbines* for *Case 1* for the *Number of Wind Turbines*.

The process can be repeated for up to 400 inputs.

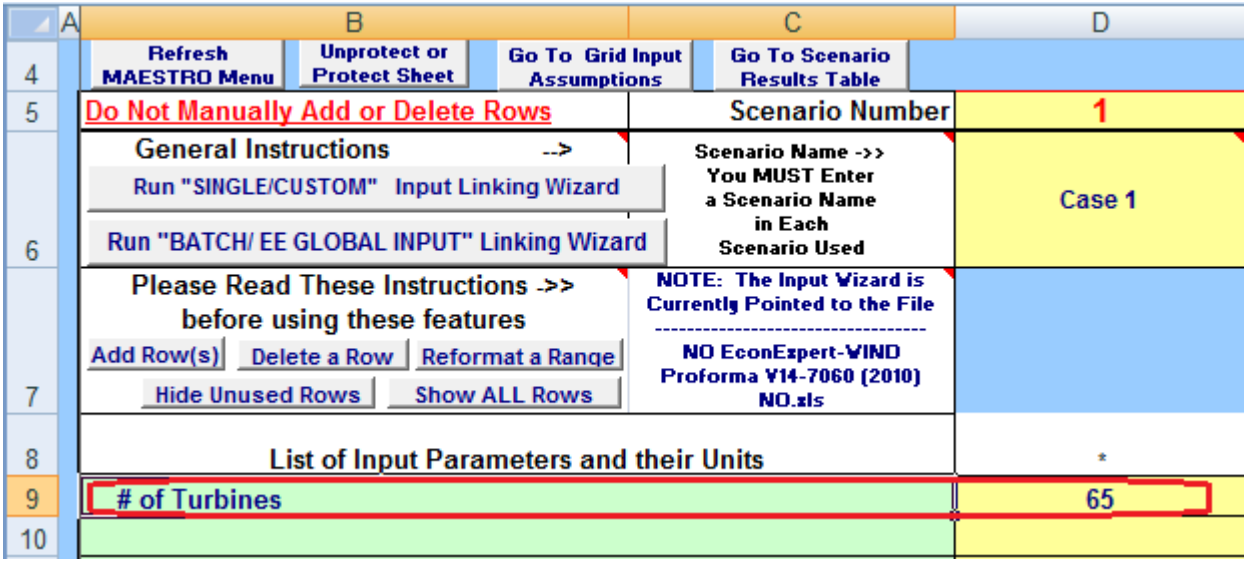


Figure 61 MAESTRO – Case 1 populated with # of Turbines

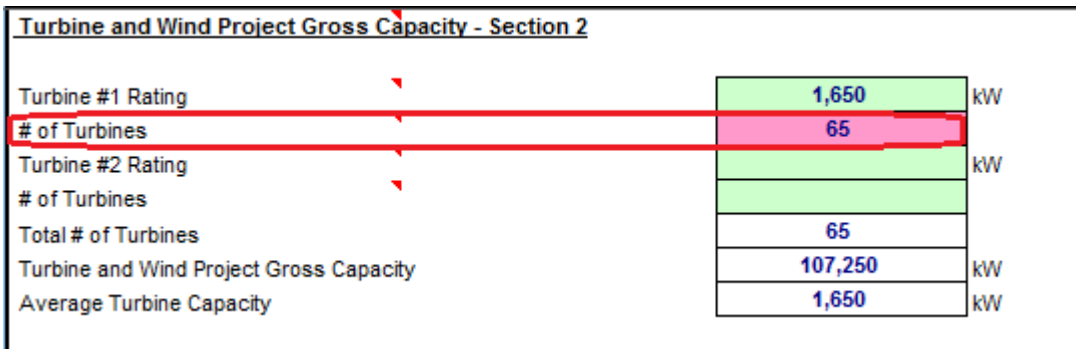


Figure 62 Linked Model - Case 1 – Linked cell in pink

Alternate assumptions for plant capacity can now be entered in successive columns and the linked Workbook will be populated with the alternate assumptions if that case is selected in the *Selected Scenario* box per the example below:

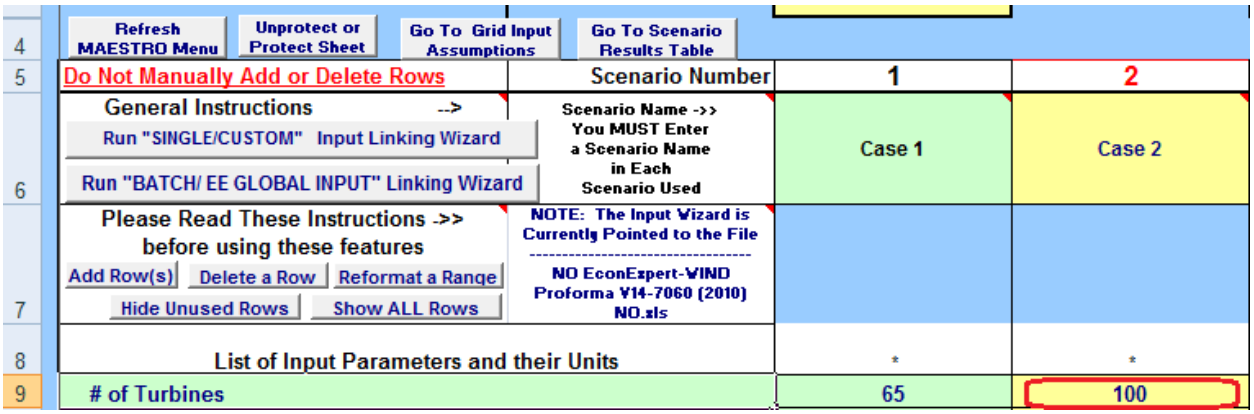


Figure 63 MAESTRO - Case 2 populated with # of turbines

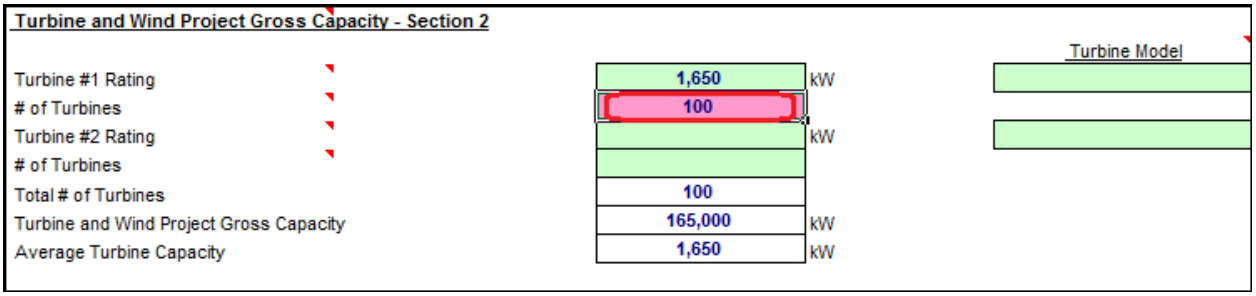


Figure 64 Linked Model - Case 2 – Linked cell in pink

- ## The Grid Input Assumptions sheet

The Grid Input Assumptions sheet allows you to link *Scenarios* containing multiple inputs such as Annual Inputs, Monthly Inputs, Data Conversion Inputs, etc. to other workbooks. Each of the Section Groups below represents a unique *Variable* that can be linked. Each row represents a *Scenario* associated with that *Variable* that can be selected corresponding to a *Case* in the Grid Selection sheet. The individual case to populate linked workbooks can be selected by entering the number of the case in Cell D1 in the *Global Input Assumptions* sheet.

The following is a screen shot of the *Grid Input Assumptions* sheet and a description of the individual controls:

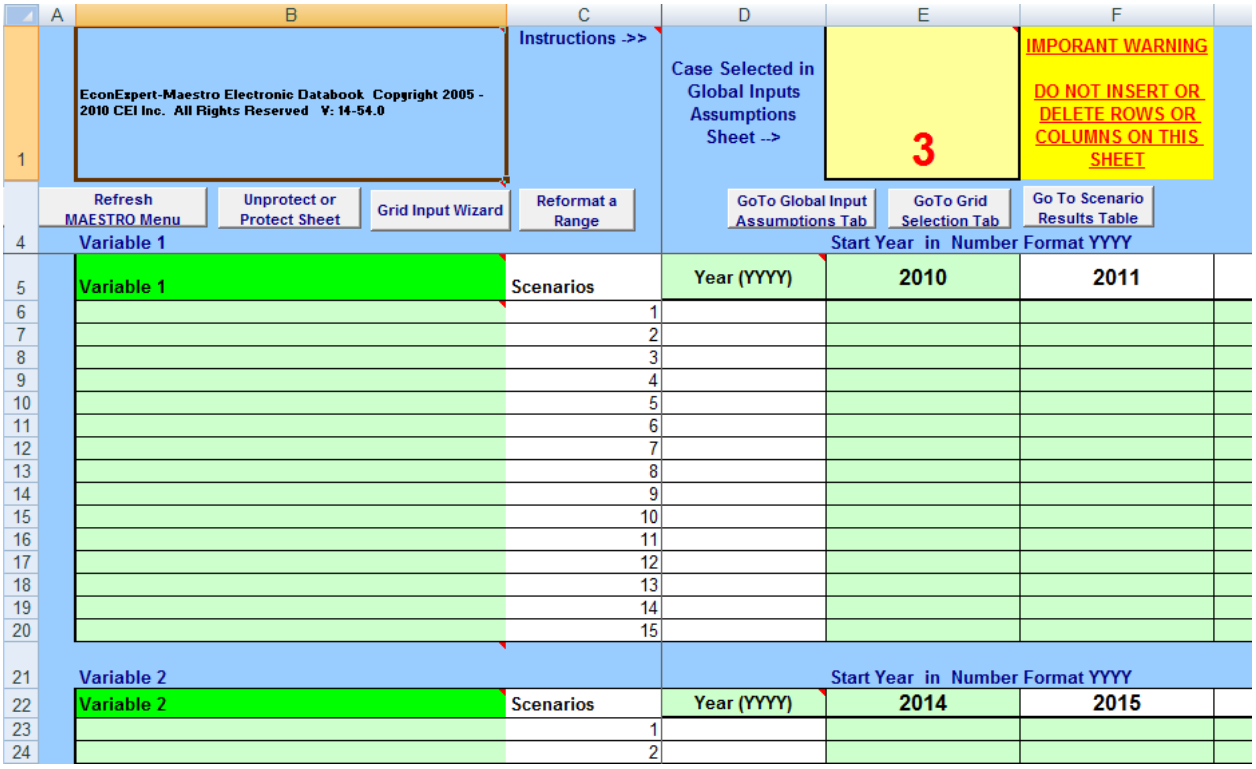


Figure 65 Grid Input Assumptions sheet

Figure 66 Selected Case Number

- *Case Selected in Global Inputs Assumptions Sheet*
  Cell E1 in the sheet shows which scenario is currently selected in cell D1 of the Global Input Assumptions sheet. This determines the individual case used to populate linked workbooks.

Figure 67 Other macro buttons on the Grid Input Assumptions sheet

- *Refresh MAESTRO Menu*
  The Refresh Menu button is on the top of every sheet of the model. This button replaces and updates the MAESTRO menu with a new one, linked to that respective copy of the model.

- *Unprotect or Protect Sheet*
  The Grid Inputs Assumptions sheet is protected, but without a password. Users can unprotect this sheet by clicking on this button, allowing you to reformat cells on the sheet. You can unprotect this sheet and reformat cells as desired, however, it is recommended that you not insert or delete or columns or rows on this sheet as such can interfere with the sheets macros. If you need to make these kinds of changes, please contact CEI and we can provide you with instructions on how to properly make these types of modifications without disrupting the performance of the MAESTRO model. Sheets can also be protected or unprotected from the MAESTRO Command Menu.

- *Grid Input Wizard*
  The Grid Input Wizard guides you through the setup of the Grid Input Assumptions and Grid Selection Sheets. This option will be described in detail.

- *Reformat a Range*
  This allows you to select a range of rows and reformat the data.

- *Go to Global Input Assumptions Tab*
  This takes you to the *Global Input Assumptions* sheet.

- *Go to Grid Selection Tab*
  This takes you to the *Grid Selection* sheet.

- *Go to Scenario Results Table*
  This takes you to the *Scenario Results Table* sheet.

The Grid Selection Sheet

The *Grid Selection* sheet allows you to assign alternative scenarios that have been linked to other models. Grid Inputs are typically associated strips of Annual, Quarterly or Monthly Scenarios where the objective is to associate alternate streams of data to different cases.

The following is a screen shot of the *Grid Selection* sheet and a description of the individual controls:

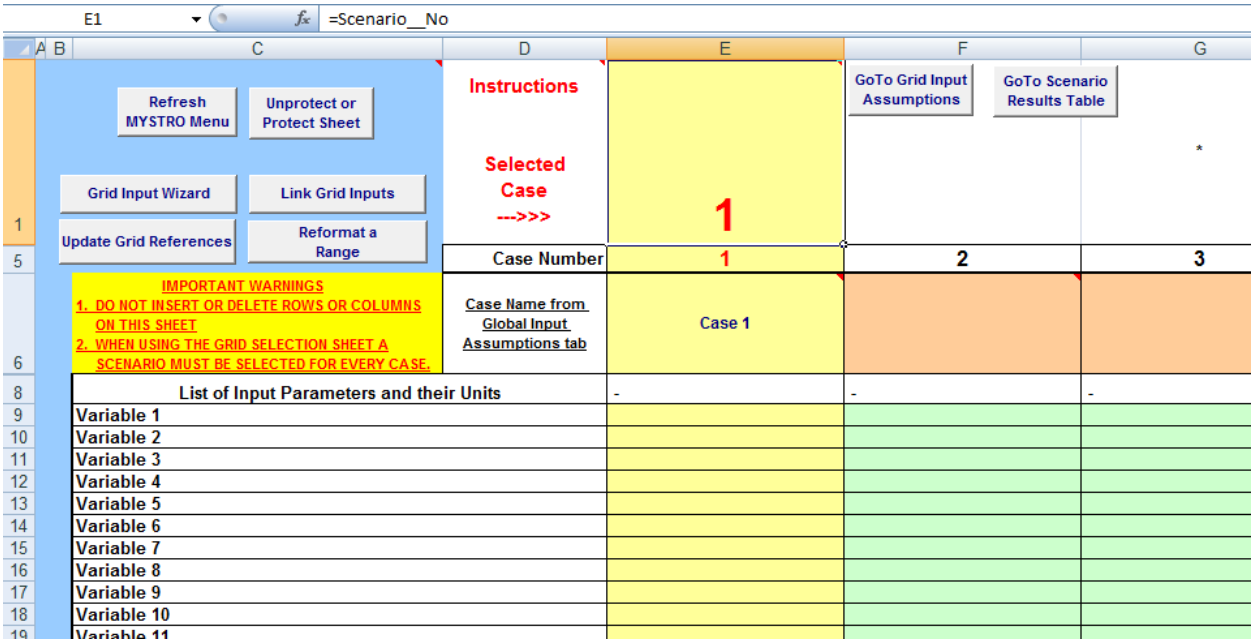


Figure 68 Grid Selection sheet

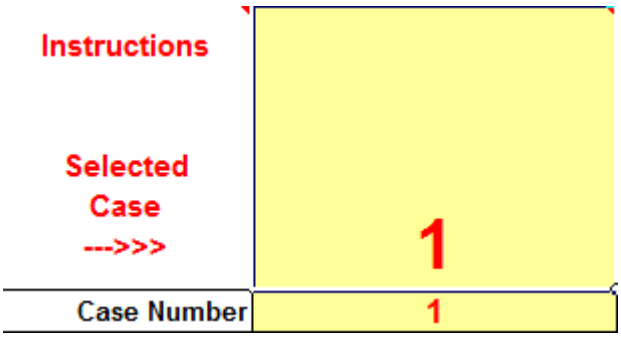


Figure 69 Selected Case Number

- *Selected Case*
  Cell E1 in the sheet shows which scenario is currently selected in cell D1 of the Global Input Assumptions sheet. This determines the individual case used to populate linked workbooks. This cell should not be modified.

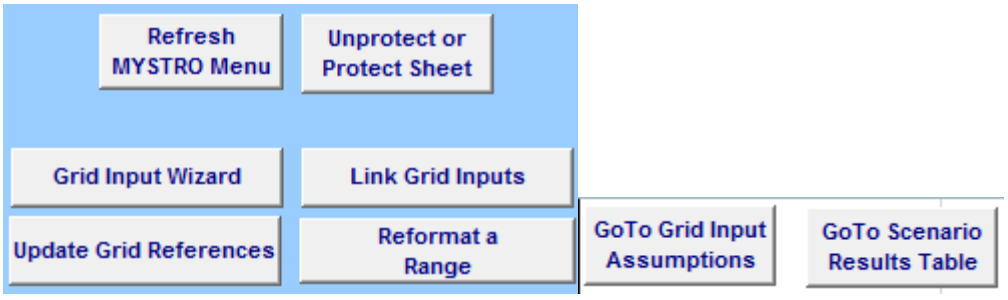


Figure 70 Macro buttons on the Grid Selection sheet

- *Refresh MAESTRO Menu*

The *Refresh Menu* button is on the top of every sheet of the model. This button replaces and updates the MAESTRO menu with a new one, linked to that respective copy of the model.

- *Unprotect or Protect Sheet*
  The Grid Selection sheet is protected, but without a password. Users can unprotect this sheet by clicking on this button, allowing you to reformat cells on the sheet. You can unprotect this sheet and reformat cells as desired, however, it is recommended that you not insert or delete or column s rows on this sheet as such can interfere with the sheets macros. If you need to make these kinds of changes, please contact CEI and we can provide you with instructions on how to properly make these types of modifications without disrupting the performance of the MAESTRO model. Sheets can also be protected or unprotected from the MAESTRO Command Menu.

- *Grid Input Wizard*
  The *Grid Input Wizard* guides you through the setup of the *Grid Input Assumptions* and *Grid Selection* sheets. This option will be described in detail.

- *Update Grid References*
  This updates the references made to the variables and their associated scenarios from the *Grid Input Assumptions* sheet.

- *Link Grid Inputs*
  This updates the data from the selected case on the *Grid Selection* sheet to the *Annual Inputs* sheet of the linked model.

- *Reformat a Range*
  This allows you to select a range of rows and reformat the data.

- *Go to Grid Input Assumptions Tab*
  This takes you to the *Grid Input Assumptions* sheet.

- *Go to Scenario Results Table*
  This takes you to the *Scenario Results Table* sheet.

Using the Grid Input Wizard

Select *Grid Input Wizard* to setup the *Grid Input Assumptions* and *Grid Selection* sheets (you can choose to *Exit Wizard* at any time):

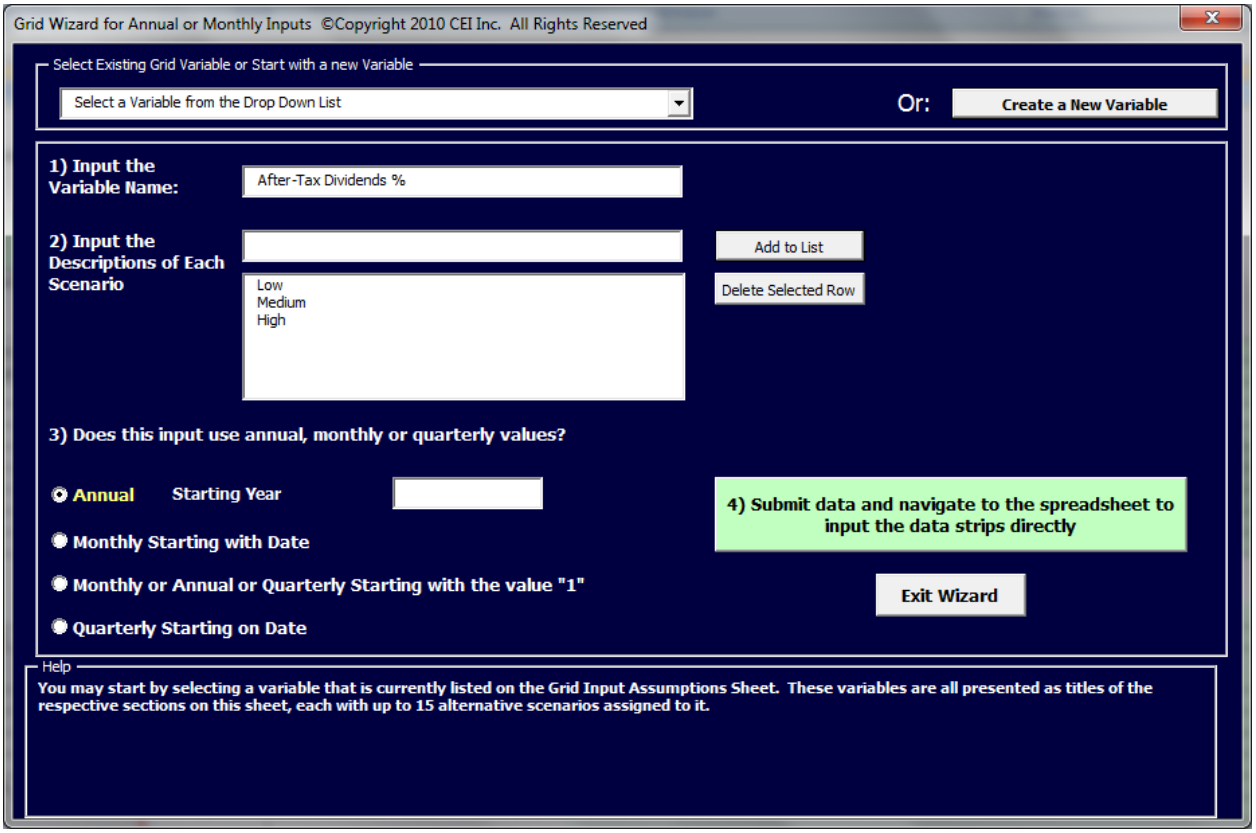


Figure 71 Grid Input Wizard

First, select a variable currently defined on the *Grid Input Assumptions* sheet. These are existing titles on the sheet, each with 15 possible scenarios. If you do not want to use an existing variable, you can choose to create a new variable:

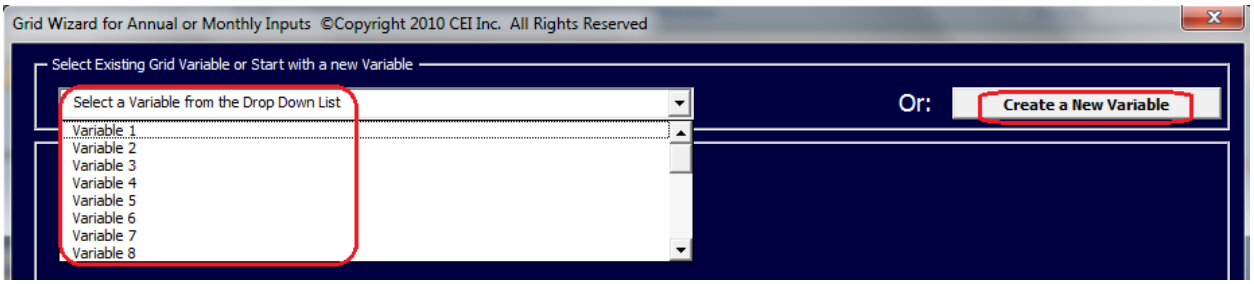


Figure 72 Grid Input Wizard - Select variable or create new variable

If you choose to create a new variable, you will be prompted for the name:

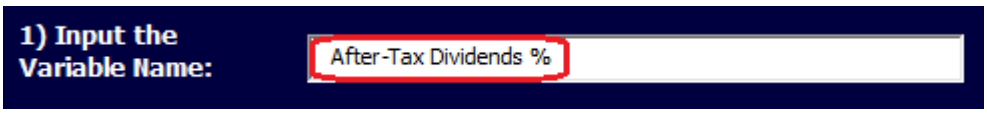


Figure 73 Grid Input Wizard - Define new variable

Next, enter a description for each individual scenario you would like to create:

NOTE You can create up to 15 individual scenarios. Data for each scenario should be entered directly in columns E – CU of the Grid Input Assumptions sheet. Column E corresponds to the earliest year, month or quarter in a scenario with columns to the right representing the next respective period.

Figure 74 Grid Input Wizard - Scenario descriptions

The third step is to specify the time period for the multiple scenario stream:

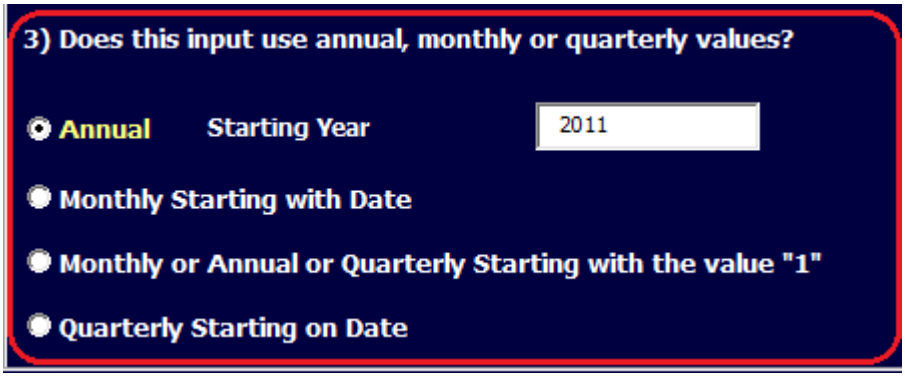


Figure 75 Grid Input Wizard - Selection of time period

NOTE Select annual to specify years starting with the first year of the earliest case. Select monthly to specify a date to begin a monthly table. Other options include quarterly or a generic type that could be either quarterly, monthly, or annual but starts with a 1 instead of a date.

The fourth and final step is to select *Submit data and navigate to the spreadsheet to input the data strips directly*.

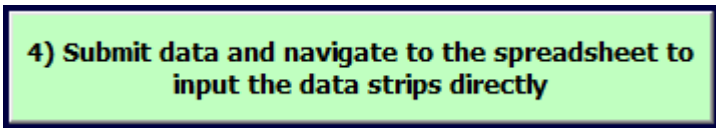


Figure 76 Grid Input Wizard – Submit variable data

Next, you will be prompted for the preferred number formatting of the scenario data:

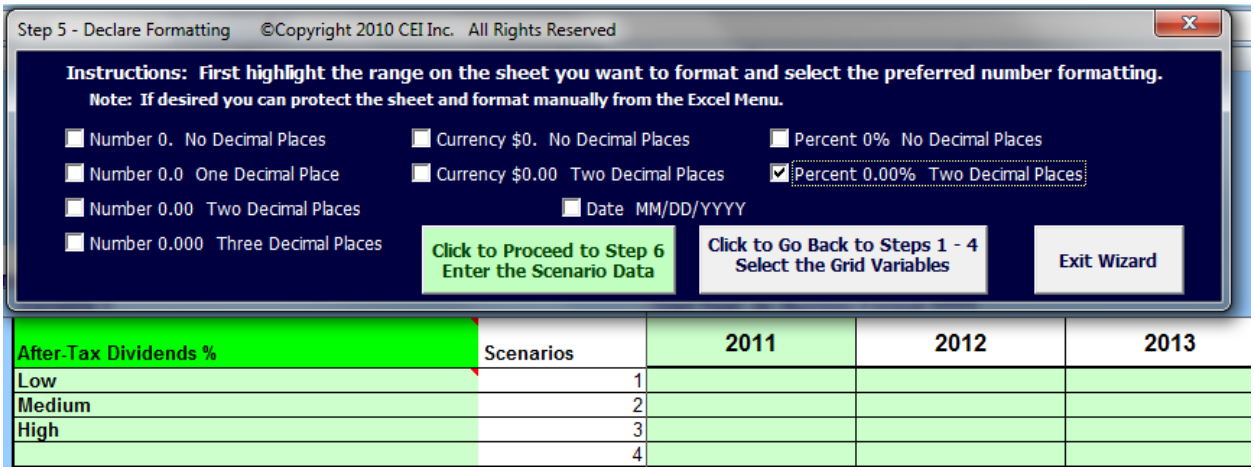


Figure 77 Grid Input Wizard - Select number formatting

Select the appropriate format and then *Click to Proceed to Step 6 Enter the Scenario Data*. You will then enter the data into the table:

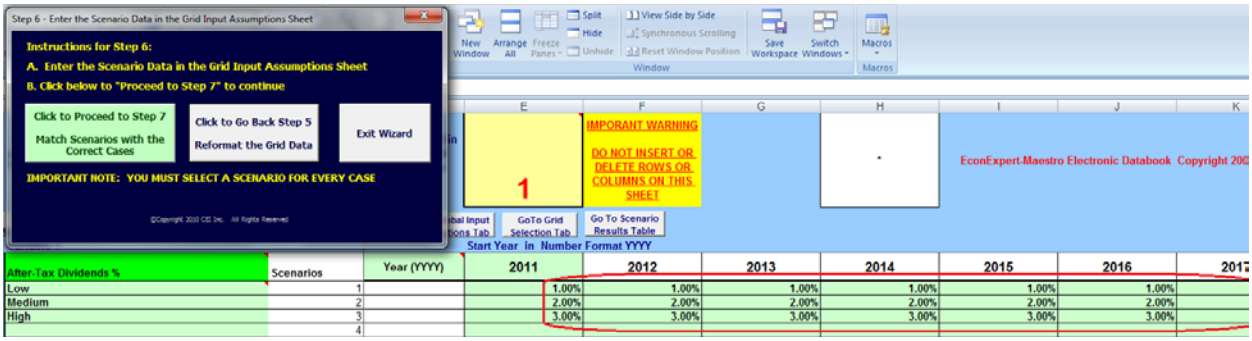


Figure 78 Grid Input Wizard - Enter data into table

Once all the data is populated, select *Click to Proceed to Step 7 Match Scenarios with the Correct Cases*:

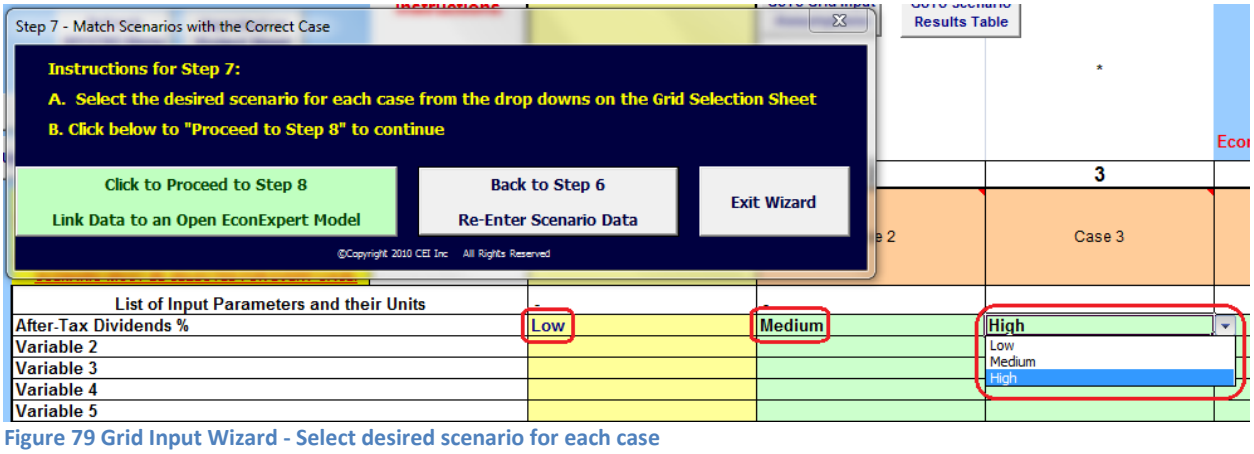


Figure 79 Grid Input Wizard - Select desired scenario for each case

On the *Grid Selection* sheet, select the scenario that is desired for each case from the drop down list next to each case. Once a scenario is selected for each case, *Click to Proceed to Step 8 Link Data to an Open EconExpert Model*:

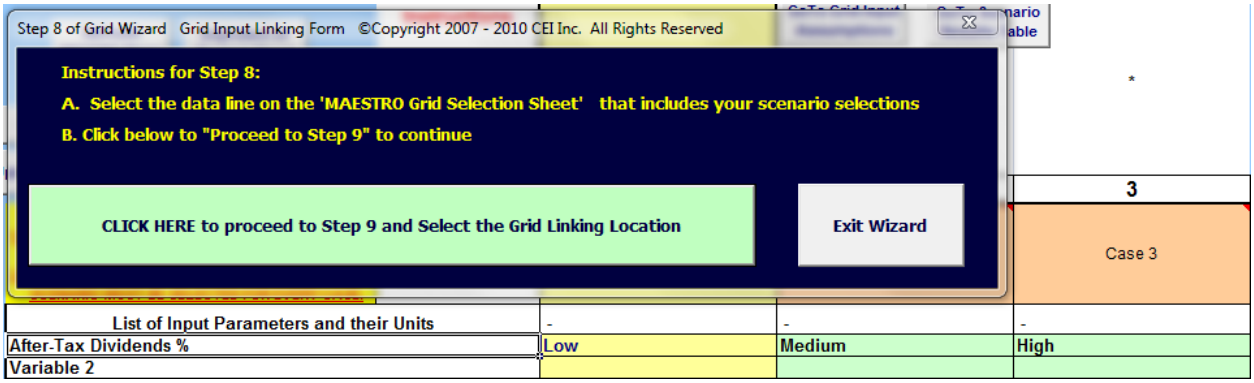
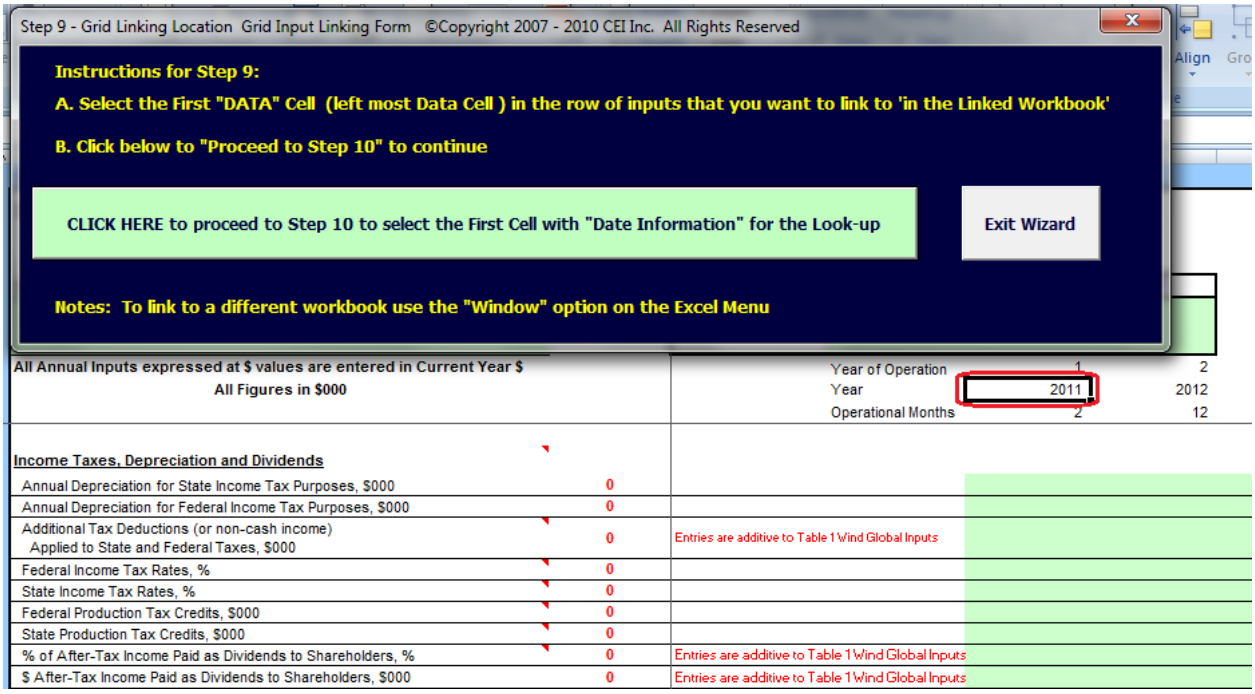


Figure 80 Grid Input Wizard - Select data line

Select the data line that contains the scenario selections and then *CLICK HERE to proceed to Step 9 and Select the Grid Linking Location*.

On the *Annual Inputs* worksheet of the linked model, select the first *data cell* in the row of inputs that you want to link to (in this case it is 2011):



Report Sheets

The MAESTRO includes the following Reports Sheets:

- List of Scenarios

  This sheet provides a list of all current Scenarios logged in the model. Columns in this sheet include:

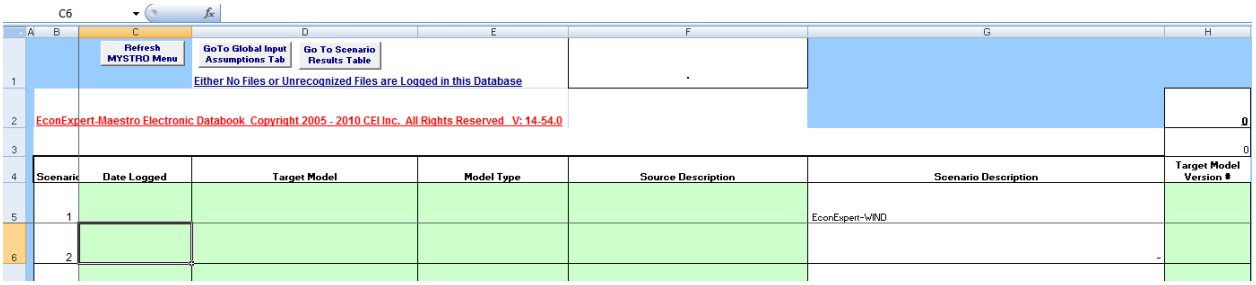


Figure 81 List of Scenarios sheet

- *Scenario*

  This column corresponds to the numbers identified in the *Global Input Assumptions* sheet.

- *Date Logged*

  This is the date that the last results were logged for each scenario.

NOTE	Results from linked models must be logged in the current spreadsheet by running the "Compute Results" macros. This field shows the last date and time that the "Compute Results" macro was run for each case.

- *Source Model*

  This is the name of the Target Model that results were computed from.

- *Model Type*

  This is the type of from one of the following Classes:

  - EconExpert-WIND
  - EconExpert-EP
  - EconExpert-DG
  - EconExpert-PV
  - EconExpert-CP
  - EconExpert-IAT
  - MAESTRO, or
  - Other User Custom Model

- *Source Description*
  This is the name of the case identified in the source model *Global Input Assumptions* sheet (if applicable)

- *Scenario Description*
  This is the description provided in the *Global Input Assumptions* sheet

- *Target Model Version #*
  The is the CEI designated Version Number of the Target Model (if applicable)

Scenario Results Table

The Scenario Results Table allows the user to log results derived from Multiple Scenarios into the MAESTRO. Since results displayed in the target linked workbooks can only display one result at a time, it is necessary to store results from multiple cases on this sheet as values.

IMPORTANT	The *Scenario Results Table* displays results from Linked Workbooks as values, not as updating formulas. As a result, if input assumptions to a specific scenario are changed the *Scenario Results Table* MUST be imported in order to be updated and so to reflect any input changes. The method for updating the Scenario Results Table is provided below.

IMPORTANT	In the current version of the MAESTRO, while inputs in the MAESTRO can be linked to several workbooks, results for the Scenarios listed in the MAESTRO must reside *in a single workbook.* This means that when accessing several workbooks from the MAESTRO, results must be consolidated into a single workbook for logging in the MAESTRO. This will be explained further below.

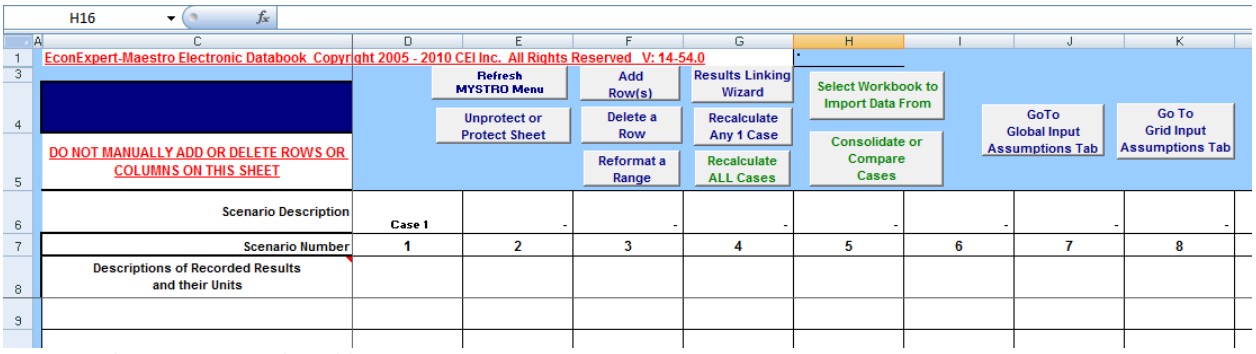


Figure 82 The Scenario Results Table

Key Sections of the *Scenario Results Table* are described below:

- *Name of Results Workbook*

Cell C3 on the Scenario Results Table provides the name of the single "Results Workbook" that a copy of the MAESTRO can import results from. The entry in this cell can be entered manually by listing the path and file name of the file that contains results that are to be documented in the MAESTRO, or using the Results Import Wizard.

As described in the note above, all results imported into the MAESTRO Scenario Results Table must reside in a single workbook. This means that if while you can have inputs from the Global Input Assumptions Sheet linked to multiple workbooks, it will be necessary for you to consolidate all of the combined results that you want to import into the MAESTRO into one file. This can be done by setting up one or a series of tables into one of the target models, or even in a new and separate workbook, as long as they all reside in one file. If you have questions about this, please contact CEI.

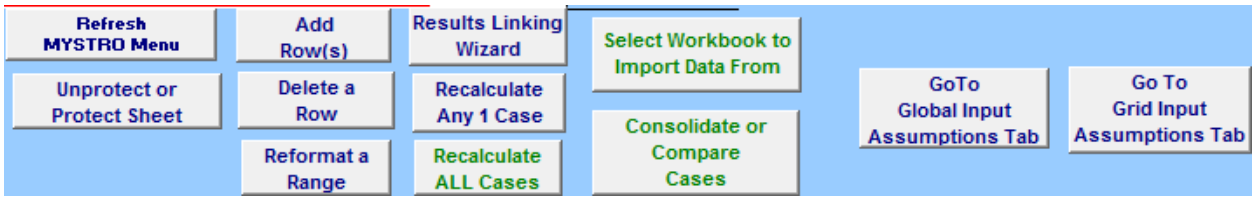


Figure 83 Scenario Results Table macro buttons

- *Refresh MAESTRO Menu*
  The *Refresh MAESTRO Menu* button is on the top of every sheet of the model. This button replaces and updates the MAESTRO menu with a new one, linked to that respective copy of the model.

- *Unprotect or Protect Sheet*
  The Scenario Results Table is protected, but without a password. Users can unprotect this sheet by clicking on this button, allowing you to reformat cells on the sheet. You can unprotect this sheet and reformat cells as desired; however, all linked sheets should be open when doing so to preserve the accuracy of the sheets macros. If you require any clarification, please consult with CEI and we can provide you with instructions on how to properly make these types of modifications without disrupting the performance of the MAESTRO model. Sheets can also be protected or unprotected from the MAESTRO Command Menu.

- *Add Row(s)*
  The *Add Row(s)* button adds row(s) to the Scenario Results Table. All linked sheets should be open before adding row(s). You will be prompted for the number of rows you would like to add beginning at the first row in the range allowed by MAESTRO.

- *Delete a Row*
  The *Delete a Row* button deletes a row from the Scenario Results Table. All linked sheets should be open before deleting a row. Select the row you would like to delete and then click the *Delete a Row* button. You will be asked to confirm the deletion.

- *Reformat a Range*

This allows you to select a range of rows and reformat the data.

- *Results Linking Wizard*
  The *Results Linking Wizard* is an automated tool for *importing* results from the Results Workbook. Details on this wizard are described later in the User's Manual. The wizard can also be accessed from the MAESTRO Command Menu.

- *Recalculate Any 1 Case*
  This button will direct the MAESTRO to cycle through the selected scenario listed in the *Global Input Assumptions* sheet and to document and update all of the desired results, as values, for the scenario included in the MAESTRO.

- *Recalculate ALL Cases*
  This button will direct the MAESTRO to cycle through all of the scenarios listed in the *Global Input Assumptions* sheet and to sequentially document and update all of the desired results, as values, for all of the scenarios included in the MAESTRO.

- *Select Workbook to Import Data From*
  The button allows you to select the source file that the reports will be generated from.

- *Consolidate or Compare Cases*
  This option allows you to consolidate the results of multiple cases, compare the differences between two cases, or show each line item from multiple cases. Using the *Consolidate or Compare Cases* wizard, you can use pre-defined reports. Details on this wizard are described later in this manual. The wizard can also be accessed from *Electronic Data Book Menu > Data Management and EDB Import > Results Reporting > Consolidate or Compare Cases*.

  NOTE The custom report creation feature is not available in the current version of MAESTRO.

- *Go to Global Input Assumptions Tab*
  This takes you to the *Global Input Assumptions* sheet.

- *Go to Grid Input Assumptions Tab*
  This takes you to the *Grid Input Assumptions* sheet.

- *Scenario Description*
  This row provides the description of each scenario provided in Row 6 on the Input Assumptions Sheet.

- *Scenario Number*
  This row provides the designated number of each scenario.

- *Enter Formula Link to Any Model (Leave Blank to SKIP)*

This column is where formulas are entered that identify for the MAESTRO model where to find the desired result to be imported. The formulas in this column are provided as formula links that can be manually entered or can be automatically loaded using the Results Import Wizard.

Rows left blank can be used as separators between data groups.

The user can also enter formulas in individual rows that perform custom computations on the Scenario Results Table.

- *Descriptions of Recorded Results and Their Units*
  This column is used to document the names and units of the respective results that will be imported into the MAESTRO.

Scenario vs. Base Case

Results against any base case can be compared using the Scenario vs. Base Case sheet.

The desired *Base Case* scenario is selected by entering the Scenario Number in cell B4. All other cases will be compared against the selected case.

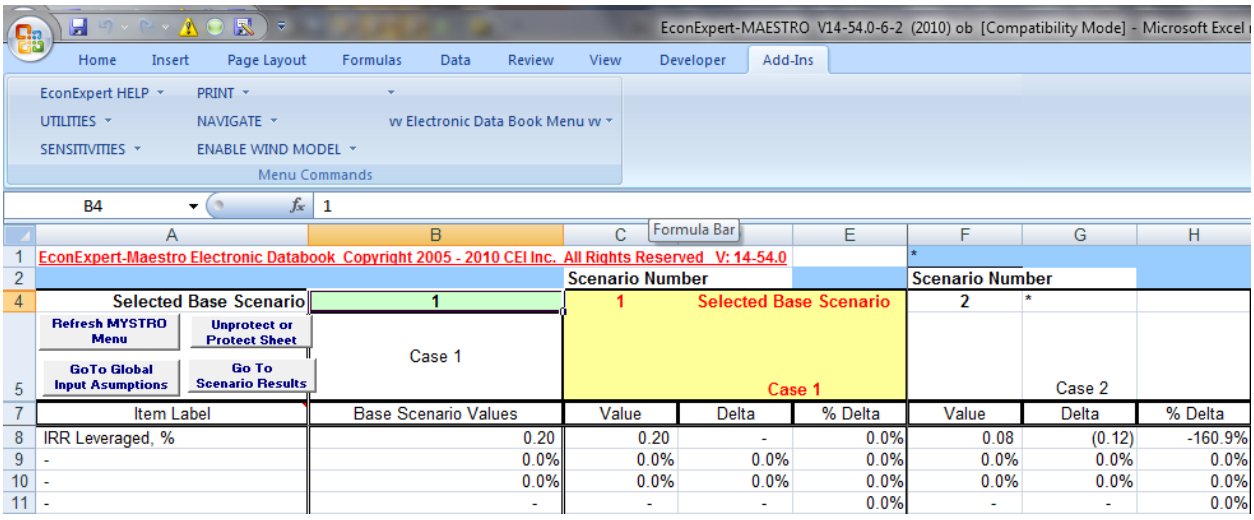


Figure 84 Scenario vs. Base Case Comparisons

The results on this table can be linked to custom sheets added by the user to the MAESTRO together with plots and other information to document results in any custom format that Excel can accommodate.

Using the Consolidate or Compare Cases Wizard

The Consolidate and Compare Cases wizard allows you to consolidate the results of multiple scenarios or compare the differences between two cases from a specified source file. You can generate pre-defined reports or create custom reports by following the steps outlined below:

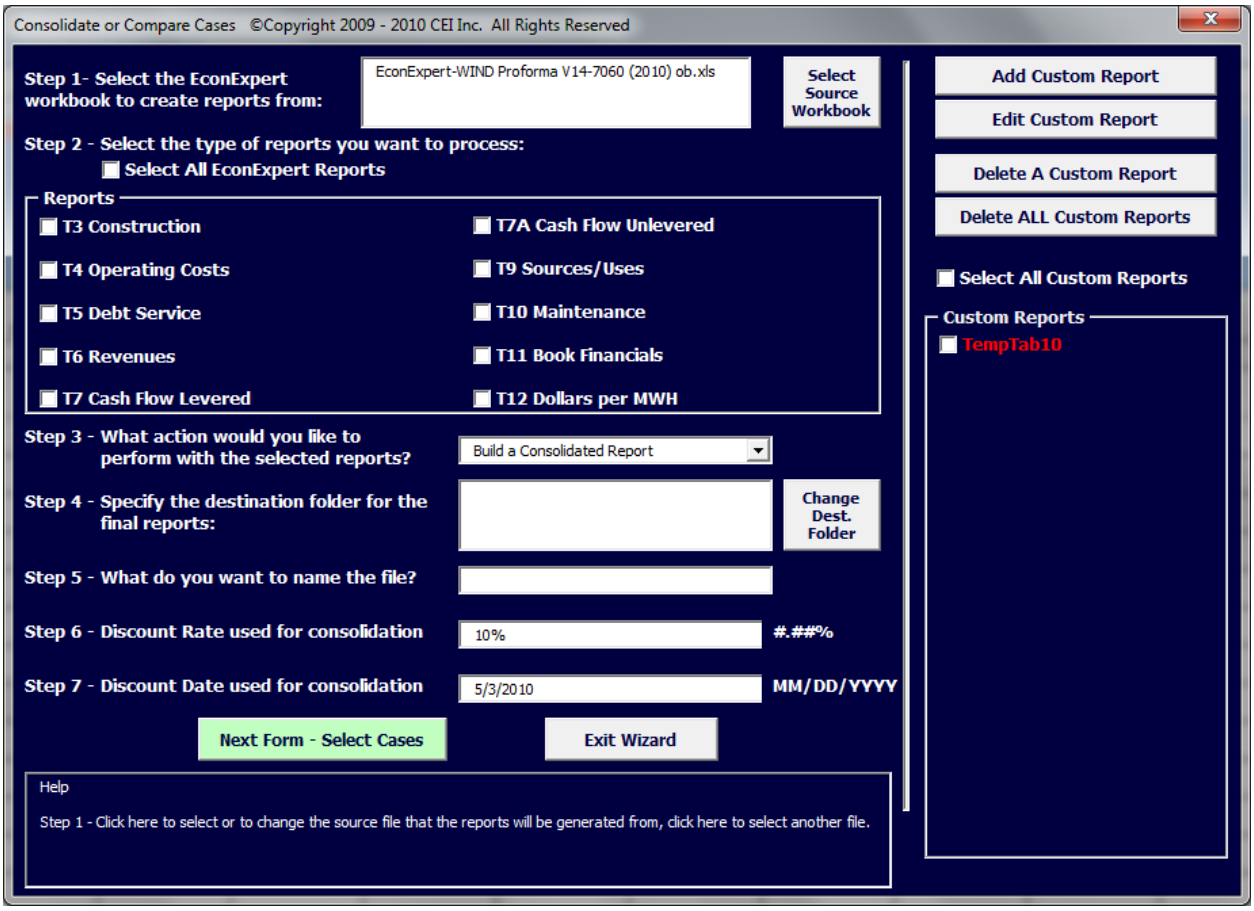


Figure 85 Consolidate or Compare Cases Wizard

1. Select the name the workbook to use as the source for the reports. To change the currently selected workbook, click on *Select Source Workbook*:

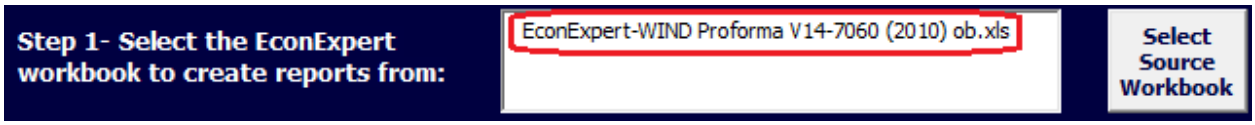


Figure 86 Consolidate or Compare Cases Wizard - Select workbook

2. Select the type of reports you would like to use:

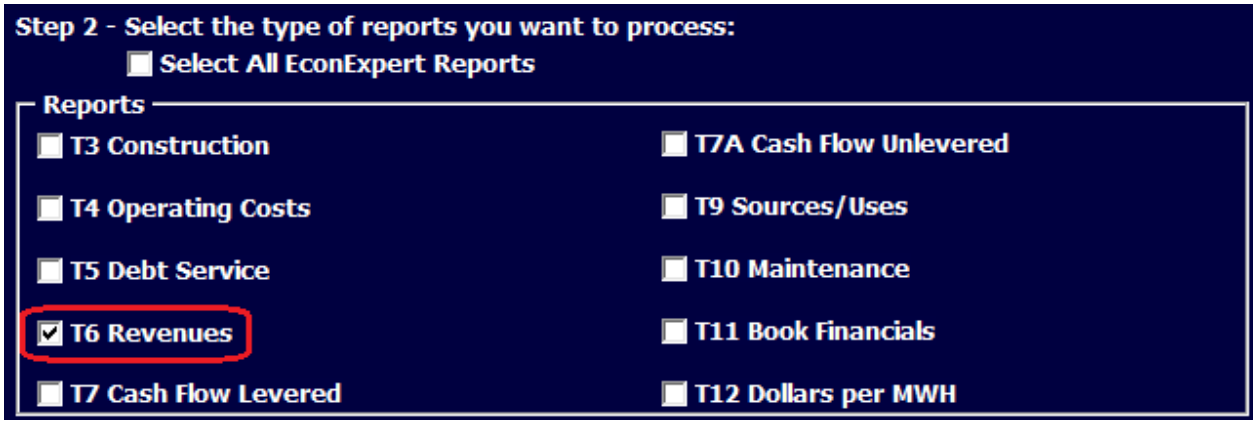


Figure 87 Consolidate or Compare Cases Wizard - Select type of reports

3. Select the action you would like to perform (consolidate, compare, or show list items):

Figure 88 Consolidate or Compare Cases Wizard - Select action

4. Select the folder in which to save the generated reports:

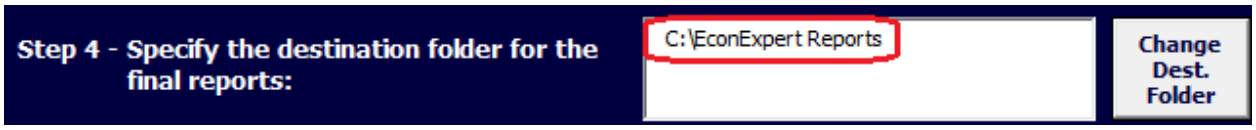


Figure 89 Consolidate or Compare Cases Wizard - Select destination folder

5. Specify the name of the report file:

Figure 90 Consolidate or Compare Cases Wizard - Select name of report file

6. EconExpert-MAESTRO will calculate new IRRs, NPVs, Coverage Ratios, etc. for the consolidated cases. Enter the discount rate to be used for the new calculations:

Figure 91 Consolidate or Compare Cases Wizard - Select new discount rate

7. EconExpert-MAESTRO will calculate new IRRs, NPVs, Coverage Ratios, etc. for the consolidated cases. Enter the discount date to be used for the new calculations:

Figure 92 Consolidate or Compare Cases Wizard - Select new discount date

8. Continue by selecting *Next Form – Select Cases*:

Figure 93 Consolidate or Compare Cases Wizard – Go to select cases

9. The next screen will prompt you to select the cases to consolidate/compare:

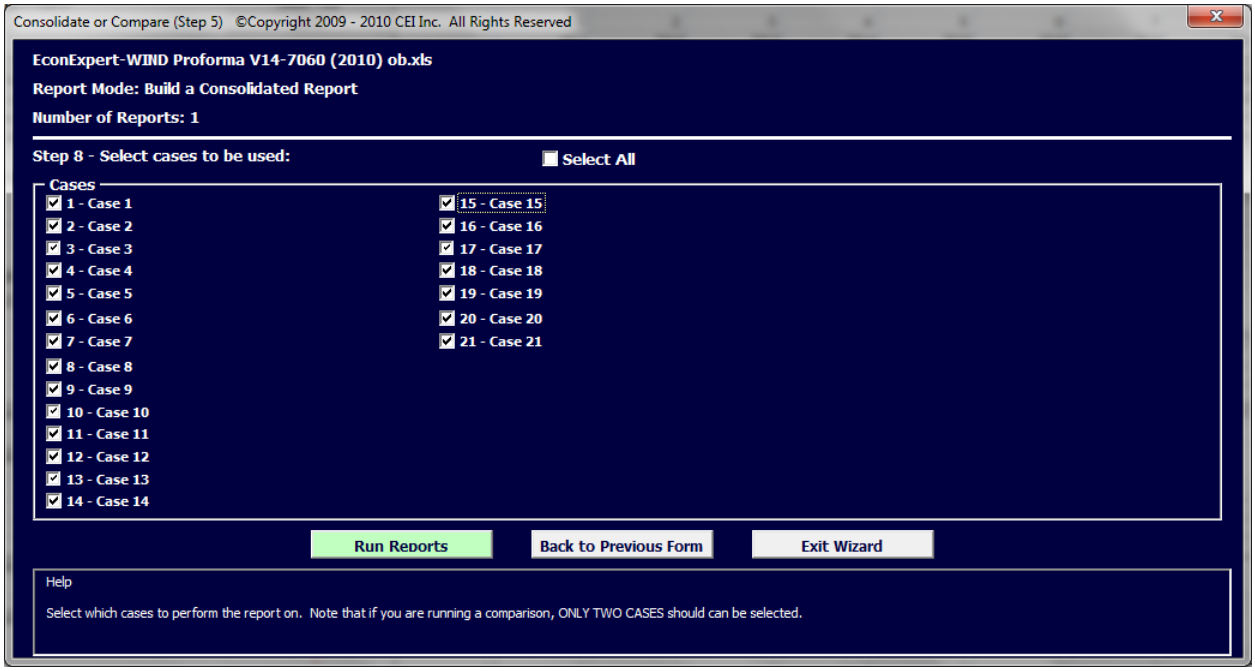
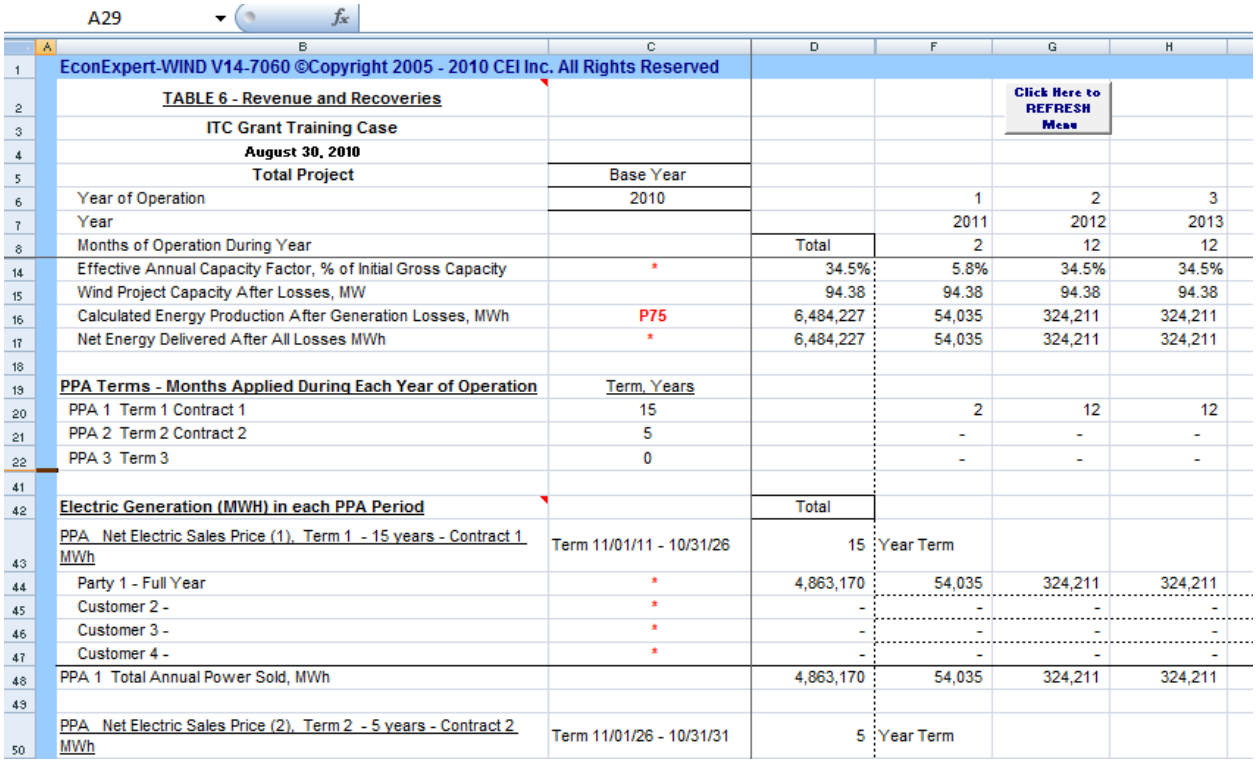


Figure 94 Consolidate or Compare Cases Wizard - Select cases

10. Select *Run Reports* to generate the Revenues Table:



	B	C	D	F	G	H
1	EconExpert-WIND V14-7060 ©Copyright 2005 - 2010 CEI Inc. All Rights Reserved					
2	TABLE 6 - Revenue and Recoveries				Click Here to REFRESH Meas	
3	ITC Grant Training Case					
4	August 30, 2010					
5	Total Project	Base Year				
6	Year of Operation	2010		1	2	3
7	Year			2011	2012	2013
8	Months of Operation During Year		Total	2	12	12
14	Effective Annual Capacity Factor, % of Initial Gross Capacity	*	34.5%	5.8%	34.5%	34.5%
15	Wind Project Capacity After Losses, MW		94.38	94.38	94.38	94.38
16	Calculated Energy Production After Generation Losses, MWh	P75	6,484,227	54,035	324,211	324,211
17	Net Energy Delivered After All Losses MWh	*	6,484,227	54,035	324,211	324,211
18						
19	PPA Terms - Months Applied During Each Year of Operation	Term, Years				
20	PPA 1 Term 1 Contract 1	15		2	12	12
21	PPA 2 Term 2 Contract 2	5		-	-	-
22	PPA 3 Term 3	0		-	-	-
41						
42	Electric Generation (MWH) in each PPA Period		Total			
43	PPA Net Electric Sales Price (1), Term 1 - 15 years - Contract 1 MWh	Term 11/01/11 - 10/31/26	15	Year Term		
44	Party 1 - Full Year	*	4,863,170	54,035	324,211	324,211
45	Customer 2 -	*	-	-	-	-
46	Customer 3 -	*	-	-	-	-
47	Customer 4 -	*	-	-	-	-
48	PPA 1 Total Annual Power Sold, MWh		4,863,170	54,035	324,211	324,211
49						
50	PPA Net Electric Sales Price (2), Term 2 - 5 years - Contract 2 MWh	Term 11/01/26 - 10/31/31	5	Year Term		

Figure 95 Revenue Report Generated

Using the Results Linking Wizard

The Results Import Wizard is an automated tool used to define data in linked models that it is desired to import into the MAESTRO. As described previously, all results imported into the MAESTRO Scenario Results Table must be reside in a single workbook. This means that while you can have inputs from the Global Input Assumptions sheet linked to multiple workbooks, it will be necessary for you to consolidate all of the combined results that you want to import into the MAESTRO into one file. This can be done by setting up one or a series of tables into one of the target models, or even in a new and separate workbook, as long as they all reside in one file. If you have questions about this, please contact CEI.

IMPORTANT The Results Import Wizard sets up results for importing. But specific results will not be populated in the Scenario Results Table from the Results Import Wizard. Data is populated into the Scenario Results Table in batch form (all results for a single case or all results for all cases). The wizard is used only for the purposes of setting up the results fields that the user wishes to document in the MAESTRO.

Prior to identifying any results that will be imported into the MAESTRO it will be necessary to have the MAESTRO opened, and to have opened the *Results* model that you want to import the data from as well as all other spreadsheets that the MAESTRO model has inputs linked to.

The Results Import Wizard can be initiated by:

- Clicking on the macro button located in the *Scenario Results Table*, or

- Selecting *Electronic Data Book Menu > Input and Results Linking Wizards > Results Import Wizard*.

The example shown here is for linking the capacity input to the EconExpert-WIND model, but is representative of the procedure followed for any EconExpert workbook.

Results Import Wizard Form 1

When you select the wizard from any of the options described above the first Results Import Wizard Form 1 will appear:

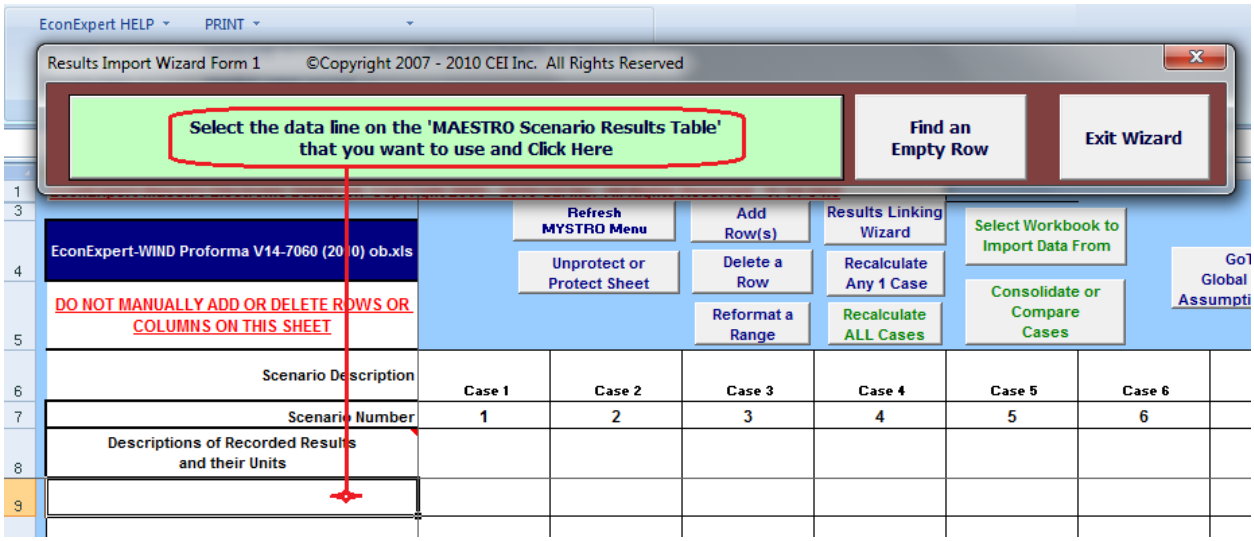


Figure 96 Results Import Wizard Form 1

Simply click on any cell in a row on the Scenario Results Table that you would like EconExpert-MAESTRO to import data into. If desired, you can allow the EconExpert MAESTRO to find the first empty row that follows the last input on the sheet, or you can manually select that row as described above in this paragraph.

When you have identified the desired row click on the macro button labeled *Select the data line on the Scenario Results Table that you want to use and Click Here*. MAESTRO will log the row number to record results to.

NOTE	As indicated above, prior to importing results into the MAESTRO from a Results Workbook, it will be necessary to have the MAESTRO opened, and to have opened any copies of other spreadsheets that you wish to link the model to. If no appropriate models are opened MAESTRO will advise you that that is the case in which event you should Exit the Wizard and open the appropriate model(s).

The Results Import Wizard "Form 2" will appear.

Results Import Wizard Form 2

For the first result, the user must select the Results Model using the *Window* option on the Excel menu bar and then selecting the Results Sheet and ultimately the Results Cell. On successive passes, the MAESTRO will automatically select the correct results Workbook. Next the user should select the target cell in the Results Model that it is desired to import from. This can be any cell in any workbook. Then click on the *Select the Data RESULTS Cell that you want to Import Data From and then…* button.

Select the target input cell you want to import data from and then click on the button shown above to accept that cell entry.

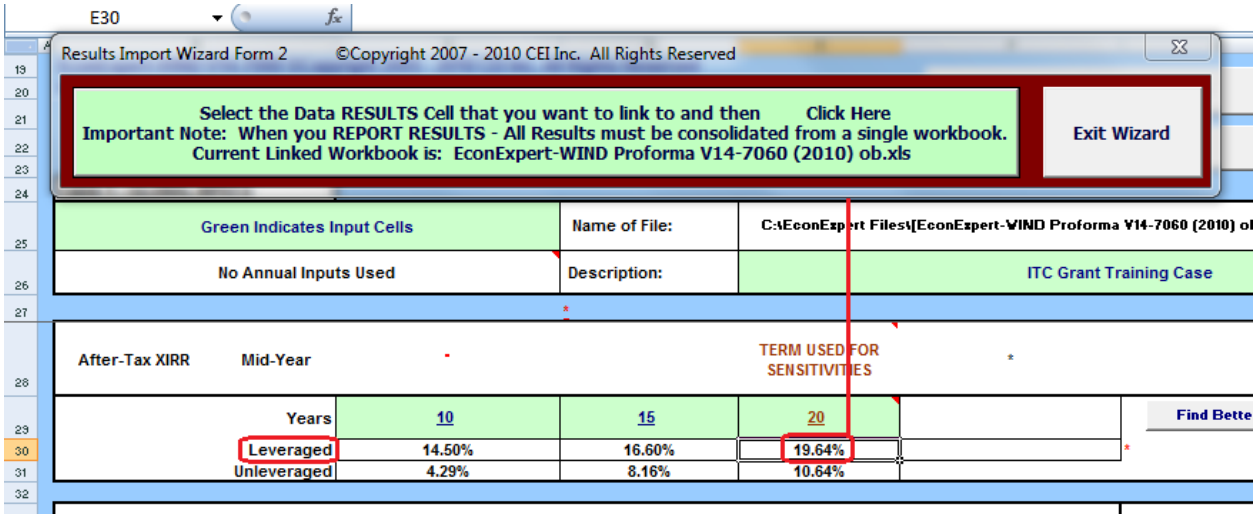


Figure 97 Results Import Wizard Form 2

MAESTRO will then ask you for the label and units of the target Result Data:

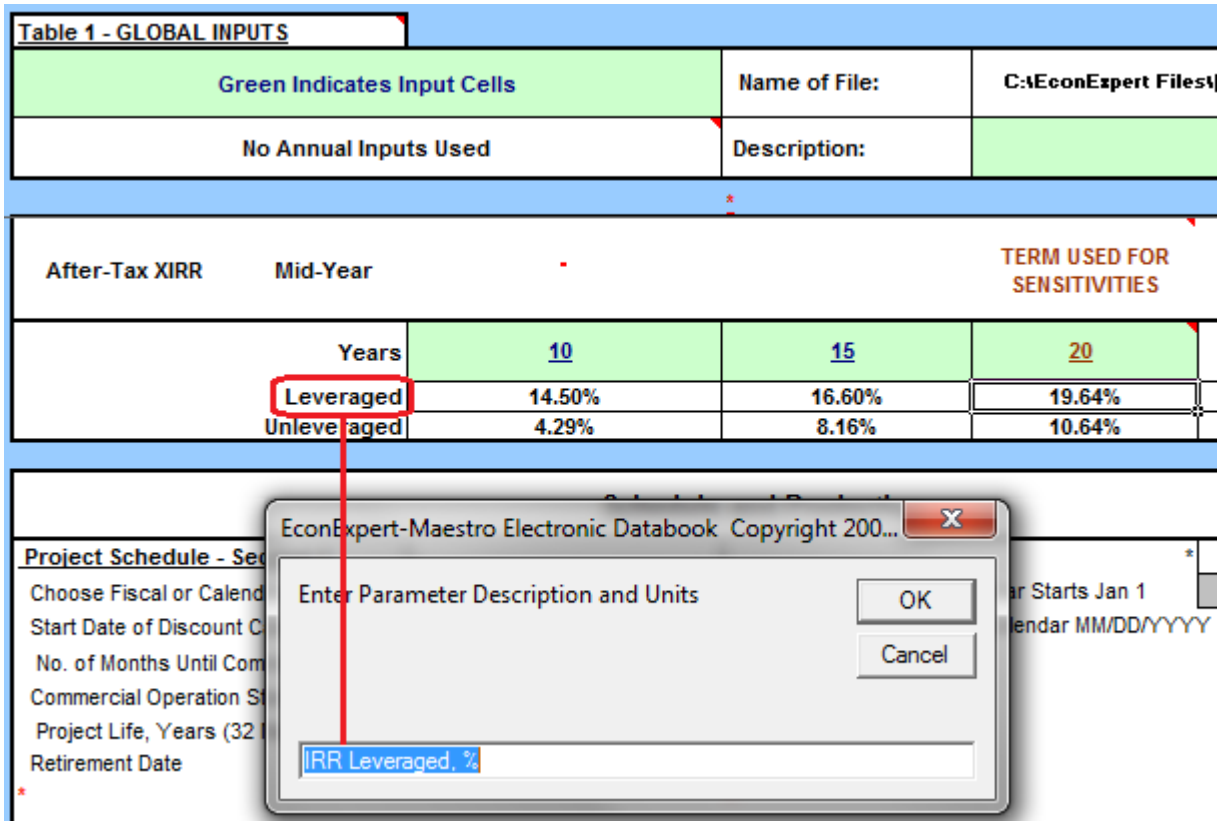


Figure 98 Results Import Wizard - Select description and units

NOTE The specific result will not be populated in the Scenario Results Table at this time. Data is populated into the Scenario Results Table in batch form (all results for a single case or all results for all cases). The wizard is used only for the purposes of setting up the results fields that the user wishes to document in the MAESTRO.

You will then be returned to the Scenario Results Table in the MAESTRO and MAESTRO will insert the correct Formula Link for the input into column B. You will then be asked if you want to link repeat the process and to import another result.

Figure 99 Results Import Wizard - Link another result?

Select *Yes* to repeat the process to log additional results to be imported. Select *No* to end the process and to prepare for the data import. In this case, logging only the IRR will yield the following result in the MAESTRO.

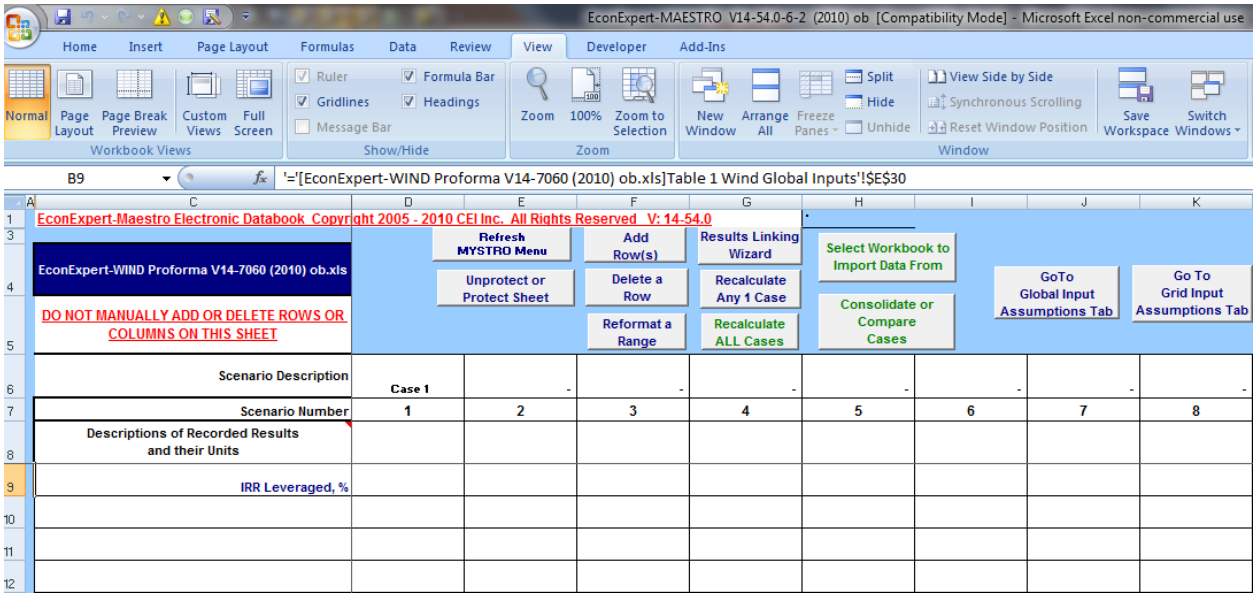


Figure 100 Results Import Wizard - Logging Results

Importing Results into the MAESTRO

You are now ready to import and document results into the MAESTRO model. For the selected case using EconExpert-WIND, three hypothetical cases are presented. These cases are intended only for the purposes of illustrating the methodology of using the MAESTRO and do not necessarily represent a practical or meaningful result. Recall that the cases loaded into the *Global Input Assumptions* sheet were as follows:

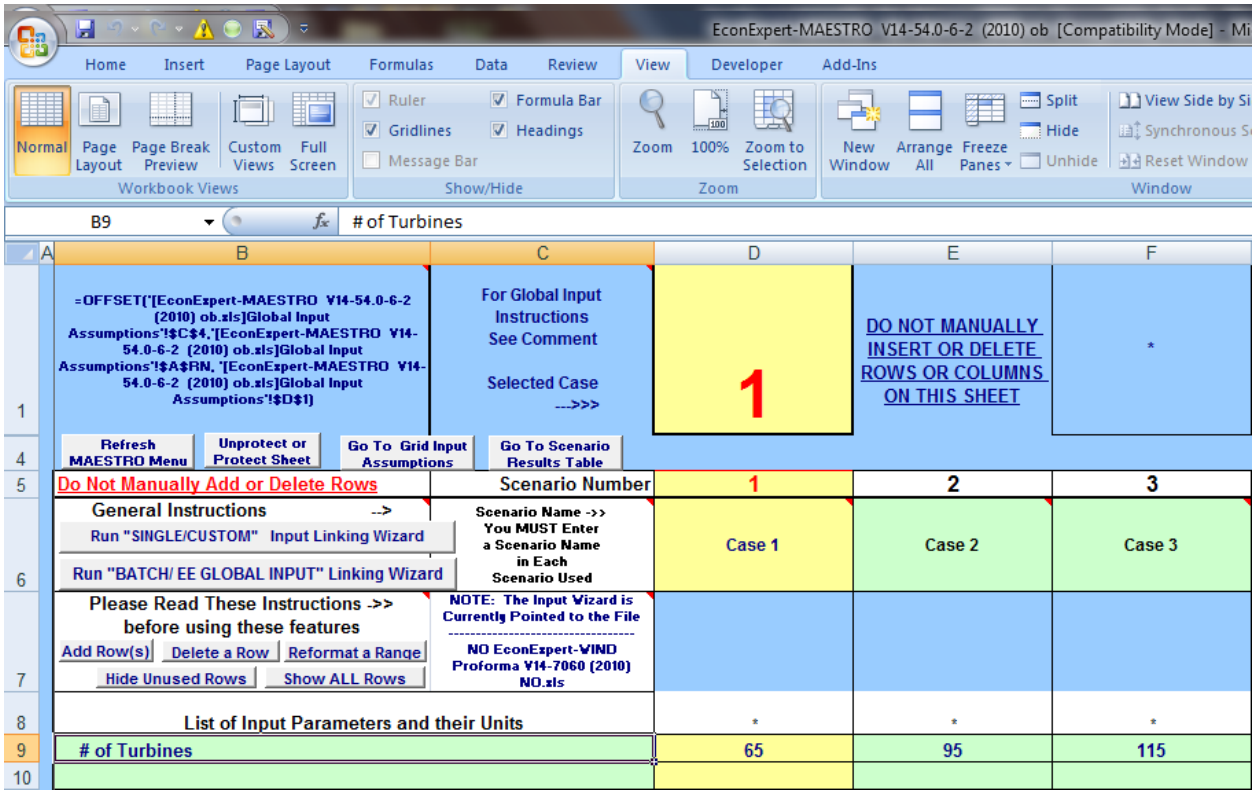


Figure 101 Results Import Wizard Assignment of Inputs

Results calculated for these cases can be logged by:

Clicking on the macro button located in cell F3 of the Scenario Results Table:

Recalculate ALL Cases

or

Clicking on the *Electronic Data Book Menu* > *Data Management and EDB Import* > *Results Reporting* > and then selecting:

> *Compute an Individual Results Case:* To import and document results for only the current selected Scenario into the Scenario Results Table

Compute All Results Cases: To import and document log results for all of the indicated scenarios into Scenario Results Table

IMPORTANT	In all cases the results will be imported and updated as values, such that when alternative scenarios are selected on the Input Assumptions Sheet, the respective results will not change. If inputs for any scenario are later changed the results must be updated by this procedure in order to be current.

The example below shows how the IRR for the project life will be documented when the *Compute All Results Cases* macro is executed.

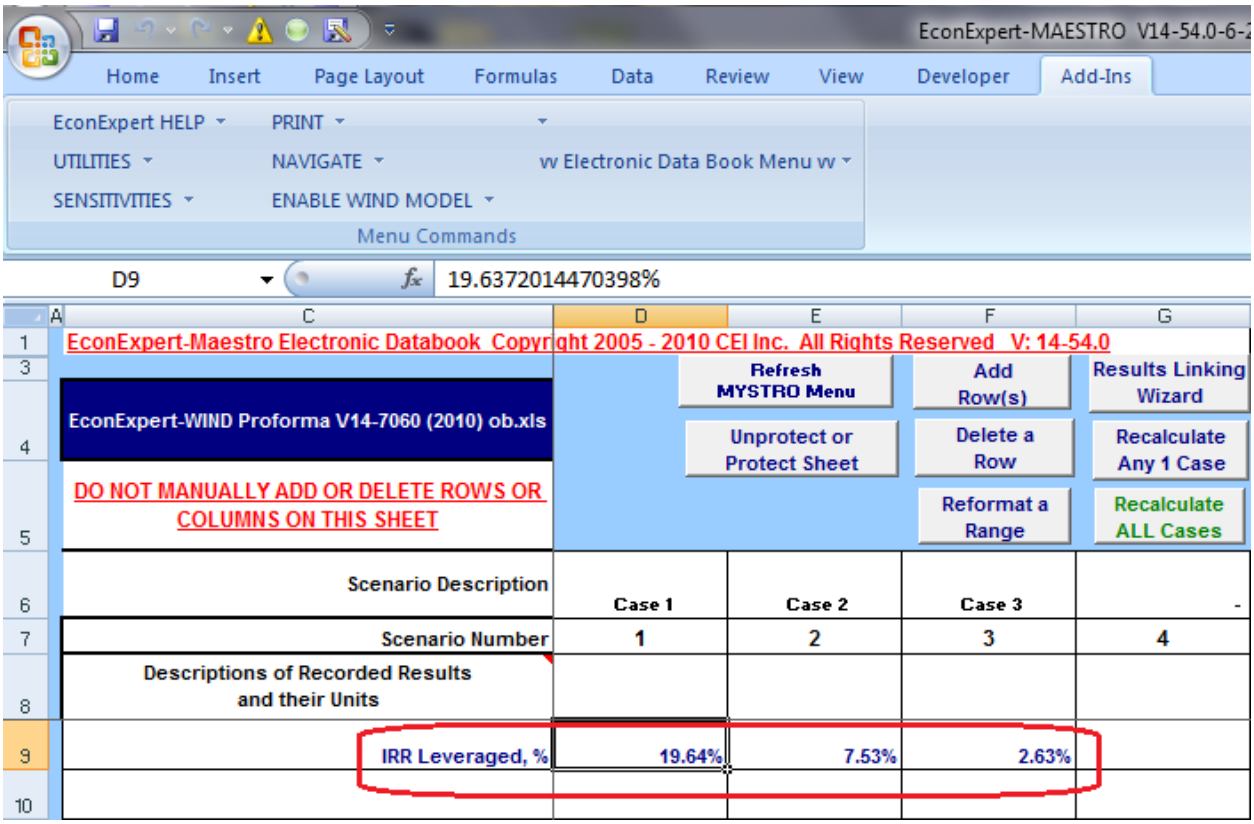


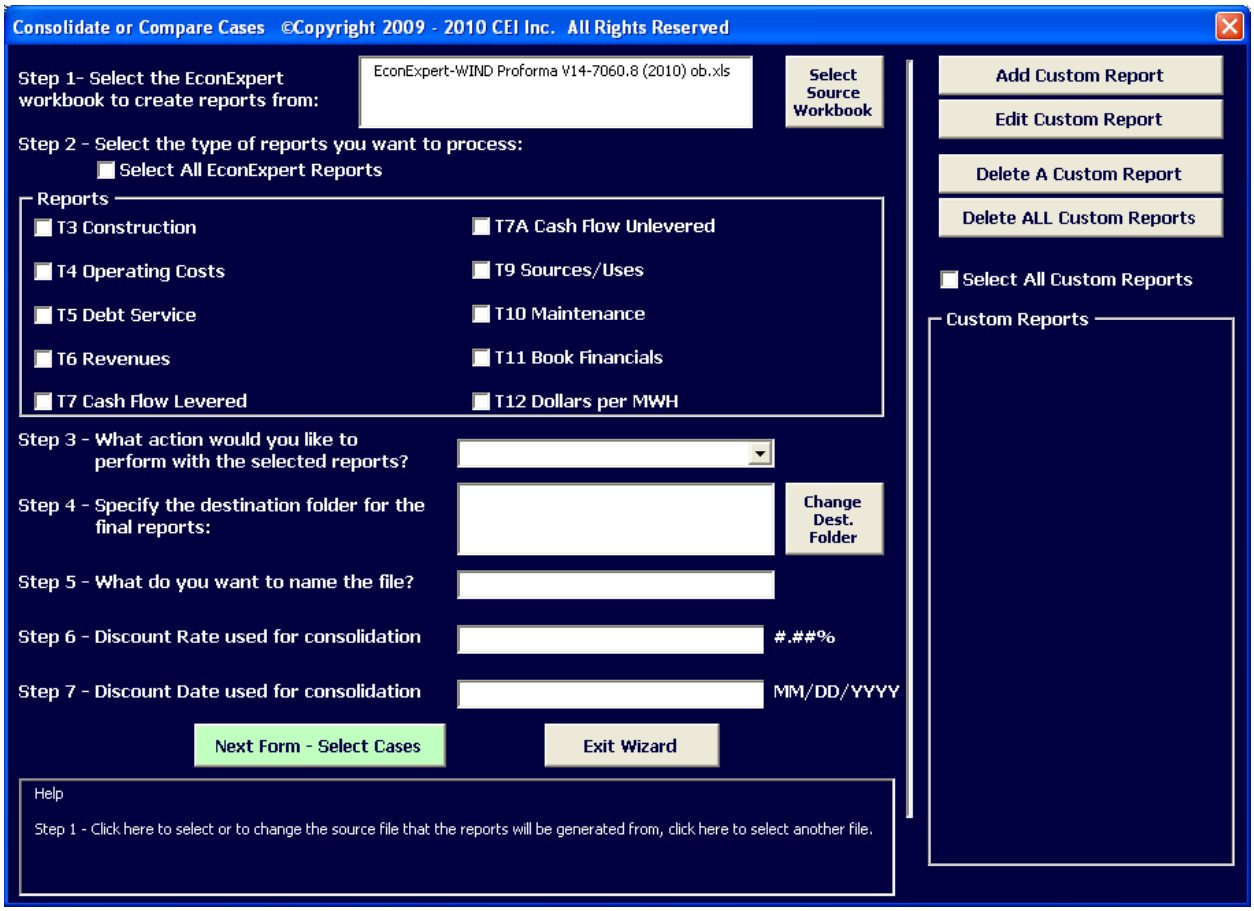
Figure 102 Results Import Wizard Import of Results

Creating New Reports using the Consolidation / Compare Wizard

EconExpert-Maestro includes an automated wizard that will also allow you to:

1. Build a Consolidated Report,
2. Show Deltas Between 2 Cases, or
3. Show Each Line Item from Each Case

These custom reports can be generated by clicking on the "Consolidate or Compare Cases" button on the Scenario Results Table Wizard. When you do this the Consolidate or Compare Case User form is displayed:



Custom reports can be produced reports can be produced using the right hand section of this form by:

1. Selecting the Report to Add,
2. Editing the Report using the Wizard to indicate how individual lines in the report should be processed and formatted (i.e. added, averaged, title row, etc.), and
3. Running the Report.

IMPORTANT: Please note that when creating custom reports the source report MUST meet the following criteria:

- Data is oriented in rows
- The Titles (Data Names and Descriptions) for each row of data appears in Column B.
- Yearly, Monthly or Quarterly data must be oriented in columns with the first period of data in Column E and subsequent periods in successive columns to the right
- Data must not extend beyond column HY, and Columns IA and IB must be available and unprotected. Columns IA and IB are where the EconExpert-Maestro Data Reporting Wizard will insert indices to establish how to process the data in the report.

For additional questions regarding how to use this Custom Report Wizard, please contact CEI.

Saving MAESTRO Spreadsheets

During the term of your license you may save and reuse installed copies of fully functioning MAESTRO models as you would save any other Excel Spreadsheet. To do so, simply use the Excel Save or Save As selections on the Excel Command Menu. The Spreadsheets you save will only work on computers that have authorized installations of MAESTRO.

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If you have multiple instances of the model opened, the menu can be synchronized with the active version by selecting the Refresh Menu button that appears at the top of each sheet.

Customizing MAESTRO

One of the many advantages of MAESTRO is the flexibility it offers allowing you to accurately custom model virtually any project. You can insert a new sheet into the model. To do this, right click on any of the Sheet Tabs and select *Insert Worksheet* from the *Excel right-click menu*.

NOTE	Be careful not to create 'Circular Calculations' using these approaches.

CEI also provides financial modeling and model customization services. For information please contact us at the address shown on the cover page of this manual.

Appendices

Overview of CEI's *EconExpert*™ Software Suite

Competitive Energy Insight (CEI), established in 1997, has developed a suite of mature and highly advanced software products for the analysis of investments in renewable energy, central power stations, commodity liquid and gaseous products, and combined heat and power. We both license these models for your direct use, and use them broadly in our project development consulting practice serving as a bench to support your in-house team. All of the EconExpert tools are Excel-based, making them completely customizable, auditable and adding all of the features of Excel to EconExpert's powerful features and architecture. Importantly, the EconExpert Models are far more than spreadsheets. Behind each model is powerful Visual Basic programming that provides highly advanced menu/wizard driven functionality taking Excel and your analysis capability to a completely new level. Standardized, accurate and applicable from simple screening to bank quality/investment grade analysis of virtually any project investment, acquisition or divestiture, EconExpert has been applied to literally billions of dollars of energy project investments including on-site generation applications, renewable energy projects and large multi-hundred million dollar central power station investments. For more information on CEI please visit ***http://www.CEInsight.com*** where you can view flash demos of our software.

CEI's financial analysis suite includes the following:

EconExpert-Partnerships and Leases™ for evaluation of Tax Equity Partnerships and certain Leasing Structures, based on projects analyzed in your own in-house custom models or with any of the EconExpert Project Financial Models described below.

EconExpert-WIND™ for W*ind Farm* projects that sell wholesale energy.

EconExpert-EP™ for wholesale *Electric Power* including solar thermal, biofuel, landfill gas, fossil and other thermal-based electric power projects.

EconExpert-Nuclear™ for wholesale *Nuclear Based* Electric Power.

EconExpert-PV for wholesale / large solar *Photovoltaic* projects.

EconExpert-DG™**, EconExpert-DG for PV or Wind**™ **and EconExpert-DG for Solar Thermal**™ are for *Distributed Generation / Behind-the-Meter* applications, utility tariff analysis and energy savings applications.

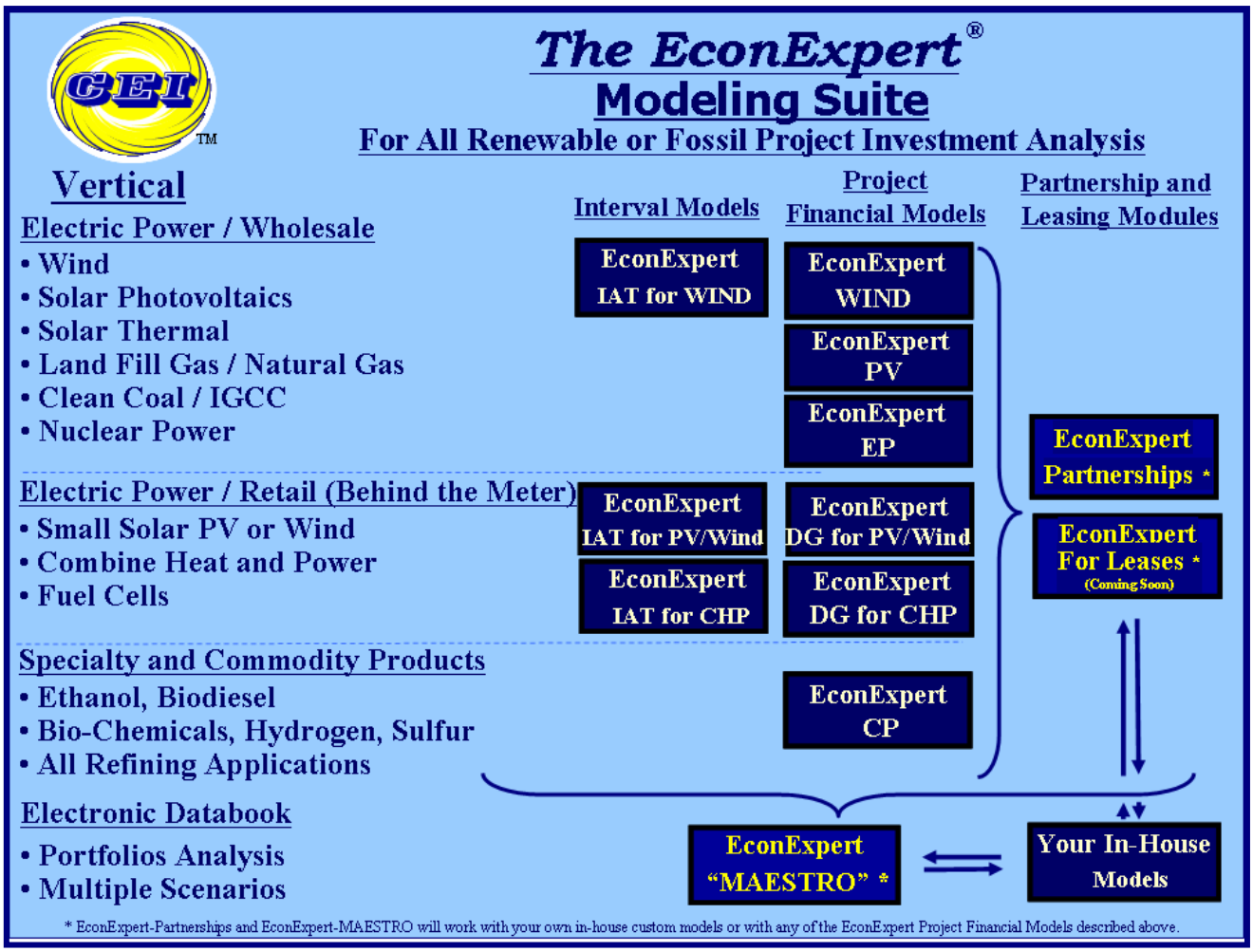
EconExpert-CP™ for *Commodity Products* including ethanol, biodiesel, synthetic natural gas, refining and coal gasification / liquefaction applications.

EconExpert-IAT™, EconExpert-IAT for PV™ and EconExpert-IAT for WIND™ for *Interval Analysis* of Combined Heat and Power, Photovoltaics and Wind projects. Simulate time-of-production analysis of energy sales as a function of interval energy prices, demand/load profiles, hourly ambient weather conditions and facility operating characteristics.

EconExpert-"MAESTRO"™ an Electronic Databook for integrated analysis of multiple scenarios or projects *based in your own custom models or in EconExpert Models*. With this tool users can perform tasks like consolidation of multiple projects into "portfolio analysis" providing consolidated expense, debt, revenue and book and cash financial statements, and develop comparisons of complex and distinct scenarios, contracting analysis and risk analysis integrating one or more of the EconExpert models described above. For the calendar year 2010, CEI is providing the MAESTRO Databook for free with any subscription for 2 or more of the EconExpert models above.

* Most features of the *EconExpert-Partnerships* and *EconExpert-MAESTRO* will work with your own in-house custom models or with any of the EconExpert Project Financial Models described above.

The following is a schematic of the software suite:



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